

In This Issue—Advertising Service Equipment

MOTOR AGE

Vol. L
Number 7

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CHICAGO, AUGUST 19, 1926

Thirty-five Cents a Copy
Three Dollars a Year

**Isn't it interesting to note
the speed with which
manufacturers are adopt-
ing the all-steel all-vision
body since Jordan popular-
ized it in the quality field
—Now watch develop-
ments in the straight eight.**

Edward S. Jordan

President
Jordan Motor Car Company, Inc.
Cleveland

"Our customers are enthusiastic—and we are making money"

says
Iver Schmidt

of
AUTOMOBILE SALES CO., INC.
Memphis

THOSE concise headlines pretty well cover the automobile merchant's conception of the Promised Land.

And the two points naturally go together. When owners are satisfied and enthusiastic over their cars, then new sales are made without difficulty and service expense is at a minimum.

So the dealer makes money by getting full profit, without the drawbacks of unwelcome trade-ins and costly servicing.

We invite correspondence from representative automobile merchants who'd like to be in this sort of situation.

STUTZ MOTOR CAR CO.
of AMERICA, Inc., Indianapolis

Stutz Motor Car Company of America, Inc.,
Indianapolis, Indiana.

Gentlemen:

We are very glad to inform you that we are having wonderful success with the Stutz line and in stating that we are having "wonderful success," we mean not only the selling end of it, but the car is standing up mechanically.

Our customers are satisfied and enthusiastic over the car and we are making money handling the Stutz account. We would also like to add that our dealings with your organization have been of the very pleasantest nature.

Very truly yours,

AUTOMOBILE SALES COMPANY

Iver Schmidt



New
SAFETY STUTZ

MOTOR AGE

Reg. U. S. Pat. Office

Vol. L

No. 7

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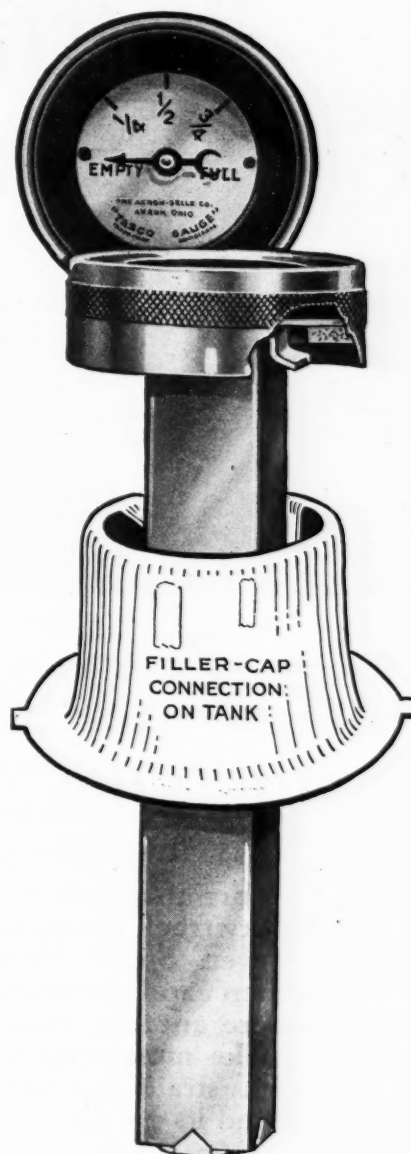
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Check Your Stock

You and your motorist customers do practically the same thing when you check up your stock of TASCO gasoline gauges and they check up their supply of gasoline with a TASCO gauge.

You appreciate the value of a careful check and you can help them to make careful checks by selling them the TASCO. If they drive a 1926 Model "V" Chevrolet sell them a Type "K" and if they drive a Star sell them a Type "J." Both these types

Retail for \$1.50

The main difference between you and the motorist is that you wouldn't have to walk so far to get more TASCO gauges as he might to get more gasoline. You need only write your jobber or to

THE AKRON-SELLE CO.

"41 Years in Business"

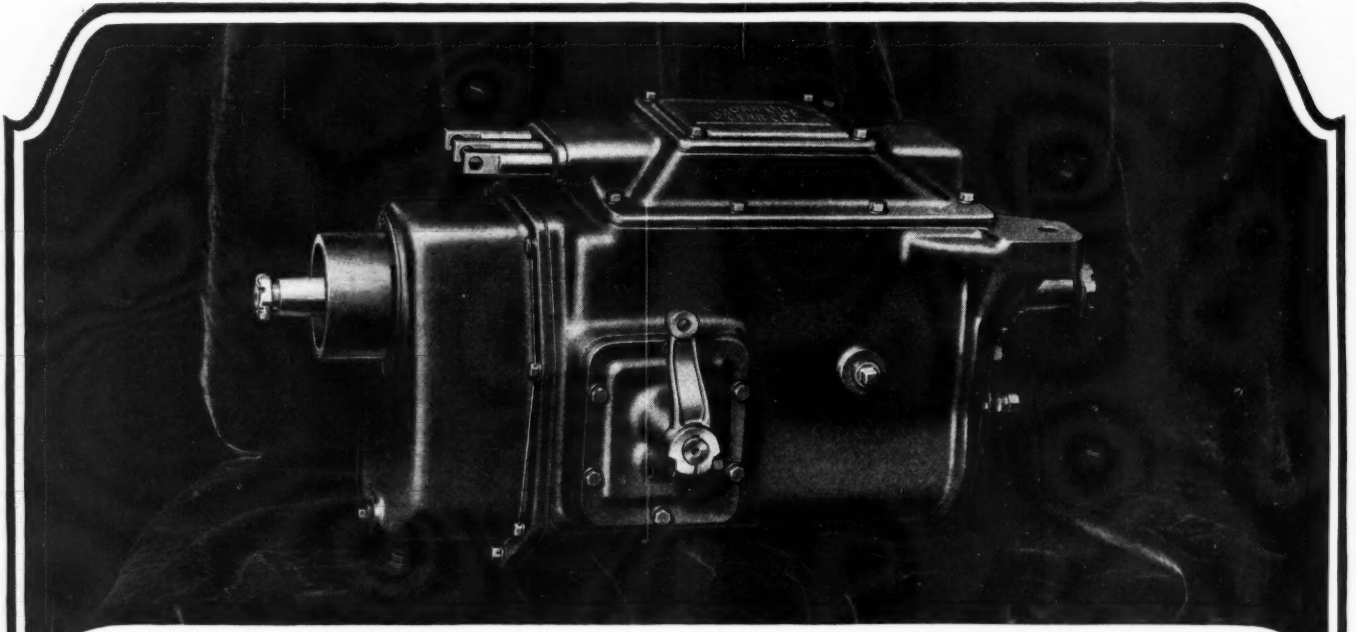
Akron, Ohio

Maydwell & Hartzell, Inc.

Los Angeles

Pacific Coast Representatives

San Francisco



The 7-Speed Transmission Increases Truck Earnings

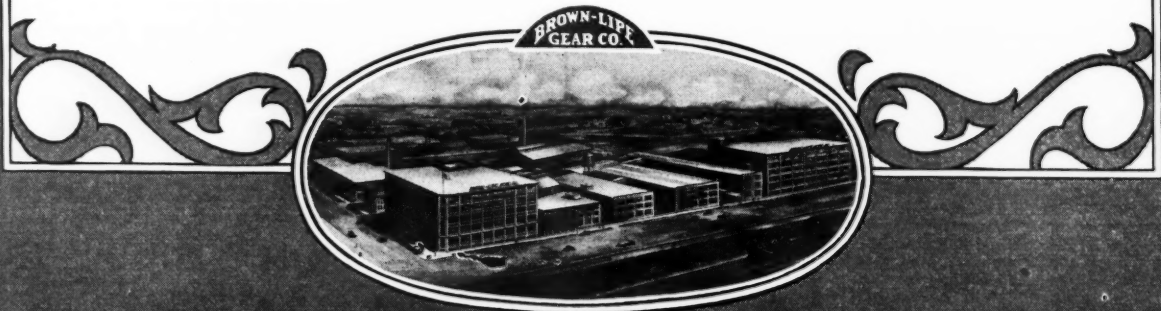
BE Sure that your next heavy duty truck is equipped with this Seven-Speed transmission. You then can haul heavier loads, go where another truck cannot, and make more trips a day—all with less strain and wear on the truck and its parts.

The lowest of the seven forward speeds lets you use full engine power safely when starting where traction is poor and enables you to go up previously "unmakable" grades. The highest speed carries you at touring rate over smooth stretches, and

the five intermediate speeds afford proper gear selections for all variations in road or traffic conditions.

Also, there are two speeds in reverse --- one materially lower than normal, which allows you to back through otherwise impassable places.

Most leading truck builders have adopted our Seven-Speed transmission as standard for heavy duty models. It is equally available to all other builders. You need only to specify "with Seven-Speed transmission" when ordering your truck.



BROWN-LIPE GEAR CO. - Syracuse, N.Y.

STUDEBAKER'S

New Custom Sedans

—selling faster than our big One-Profit plants can make them

Never in motor car history has the public expressed its preference more quickly or more emphatically. In the first thirty days these Custom Sedans have more than doubled the sales of Studebaker Sedans for any previous month.

Never, until now, have custom lines, custom refinements and custom beauty been embodied in a car of Studebaker's fine performance and rugged durability at a price within reach of the great American family.

In five short days over a half million people flowed in and out of Studebaker sales rooms all over the United States to see these new Custom Sedans—and their vote and verdict were as one . . . here, at last, is custom car luxury without custom car cost—here, at last, is the final custom beauty of contour, color and complete appointments at a price only Studebaker One-Profit facilities could make possible.

No wonder this half million acclaimed the idea of a custom car at the price of a conventional car.

No wonder Studebaker dealers are today the envy of the industry. For in addition to the exclusive sales advantage of Custom Car Luxury at conventional car cost, the Studebaker franchise offers these further advantages: ① One-Profit Value. ② Unit-Built Construction. ③ Always Kept Up-to-Date. ④ Used Car Pledge. ⑤ Low Time-Payment Rates.

If Studebaker is inadequately represented in your locality, or not represented at all, write us at once regarding the sales rights for these fast-selling Studebaker cars.

THE STUDEBAKER CORPORATION OF AMERICA, SOUTH BEND, INDIANA

S T U D E B A K E R

TIME WAS SHORT—Long Distance *bought*
\$ 12,000
 WORTH OF LUMBER



A LUMBER and mill-work concern of Bridgeport, Connecticut, needed a quantity of spruce lumber, of a kind then very scarce. They received a tip that a desirable cargo was about to land in Boston. How could they get to it before it was sold? . . . A long distance call got the lumber just in time and it was shipped immediately—200,000 feet; value, \$12,000.

MEN, in an ever-increasing range of businesses, are learning the economy of Long Distance. In buying. In selling. In making difficult appointments. Where something must be done now or not at all. In those numerous emergencies where expense must be cut, where more miles must be covered and more people interviewed. Every day American business men handle thousands of transactions by Long Distance. Adjustments and purchases are made. Numberless business details are attended to. And a call is often the most economical as well as the quickest way to get a thing done.

It may be that your concern has not tested and learned the usefulness of the

telephone to distant cities and towns. Do you think of it only when someone is wanted in your own city or near at hand? The greater the distance, the greater the service! The telephone can often save you a tiresome trip around many states, just as it constantly saves you walks over town.

Has a special study ever been made to learn the ways in which Long Distance can serve your business? Our local Commercial Department will gladly make such a study free. In the interim, what distant man or concern would it be to your advantage to talk with? The instrument on your desk will connect you, regardless of the distance, now. *Number, please?*

BELL LONG DISTANCE SERVICE



Fageol Coaches
Garford Buses and Trucks
GMC Trucks
Graham Brothers Coaches and Trucks
International Coaches and Trucks
Mack Buses and Trucks
Safeway Buses
Studebaker Buses
White Buses and Trucks
Yellow Coaches

24 buses and trucks of 10 different makes were exhibited at the 1926 convention of the American Railway Association.

Every one of the motor vehicles submitted to these transportation experts was equipped with Timken Tapered Roller Bearings.

And in regular production, 95% of ALL makes of buses and trucks in America are Timken-equipped.

Timkens are used in transmissions, differentials, pinion or worm mountings, rear wheels, front

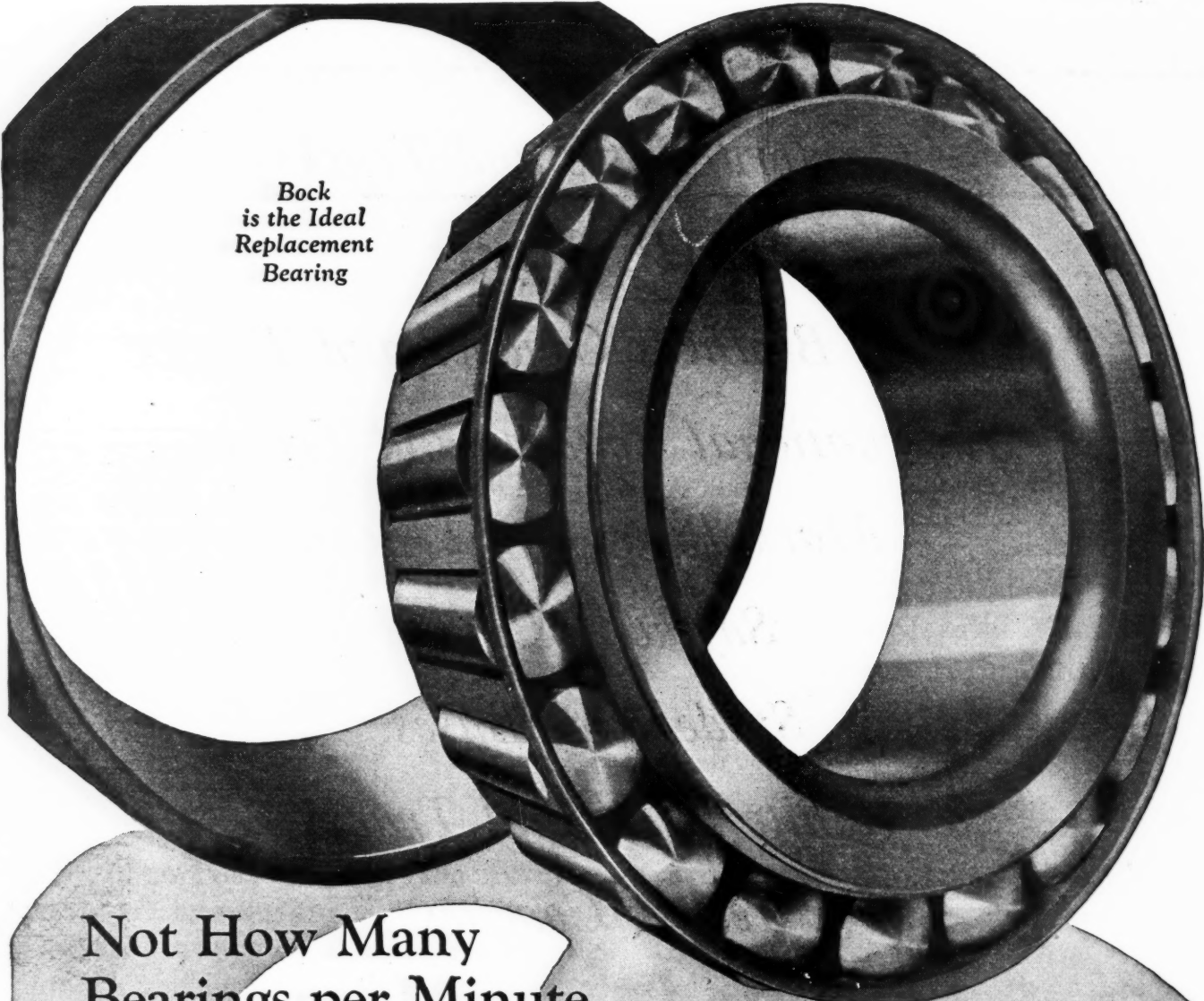
wheels, steering pivots, fans, and auxiliary drives.

Timkens keep these units rigid, quiet, highly wear-proof and compact. Timkens do it with their tapered design, *POSITIVELY ALIGNED ROLLS* and Timken-made steel. These features enable Timken Bearings to carry thrust and all other loads, with less friction, and in less space for any given capacity.

The cash value of such bearing characteristics is clear from the unanimous choice of Timkens by makers and users of commercial vehicles.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN
Tapered
ROLLER BEARINGS



**Bock
is the Ideal
Replacement
Bearing**

Not How Many Bearings per Minute, but How Many Miles per Bearing

IN the engineering laboratories at the Bock Bearing factory, continual tests are being run to determine the relative capacity and endurance of Bock and other bearings.

The law that governs our organization is simply this, "Bock must always be better," and these scien-

tific tests consistently show that Bock Bearings are better.

Carrying radial, thrust and combination loads on their tapered, round head rollers, they have endurance and capacity not equalled, we believe, in any other anti-friction bearing.

THE BOCK BEARING COMPANY, TOLEDO, OHIO

Member National Standard Parts Association

BOCK

TAPER ROLLER BEARINGS

Check Your Faults and Then Succeed

Profit by the Mistakes of Others

IF YOUR business is not as successful as you think it should be there is almost certainly something wrong within your organization that you will be able to correct. It is a shortsighted business man who stupidly says, "This business I am in is no good anyway. Nobody can make any money in it."

By looking around you will see that smart business men are making money in all lines of legitimate business, but also in every business you will see the failures in all stages of decadence. Business is good for those who make it so.

The man who will examine his own business and discover and acknowledge its faults has already taken

a long step toward success. Everybody makes mistakes and there is not a successful business today that has not made its share of them. It requires constant vigilance on the part of the most successful institutions to keep from drifting into the common faults of the crowd.

The business man who early in his career recognizes and analyzes his faults has a distinct advantage in the battle for business supremacy provided he has the energy and courage to guide his future course by the lighthouses that his errors have erected for him.

Among the many services rendered to automobile dealers by MOTOR AGE one of the most valuable was the recent series of articles by Clarence Phillips on "Planning and Launching a Dealership." In the preparation of these articles Mr. Phillips had the advantage of very frank statements

Things That Stand in the Way of Success

Out of the experience of a large number of dealers Clarence Phillips of the MOTOR AGE staff has compiled this list of the errors that are to be avoided if the dealer is to succeed. The mistakes are named in the order of their importance and after each is the percentage of dealers, now successful, who recognized it as a fault standing in the way of their progress.

Careless Used Car Trading.....	65 Per Cent
Shop on Unprofitable Basis.....	52 Per Cent
Undercapitalization	40 Per Cent
Reckless or Bad Crediting.....	35 Per Cent
Improper Bookkeeping System.....	32 Per Cent
Neglect of Accessories as a Source of Profit	25 Per Cent
Failure to Survey Potential Market.....	21 Per Cent
Poor Location	8 Per Cent
Failure to Advertise.....	5 Per Cent

Other dealers may check themselves by this list and in so doing may discover the thing that stands in their own path of progress.

from 146 successful dealers detailing the mistakes which they made when just starting in business and which they now recognize were serious enough to have greatly impaired their chances for success if they had not been corrected. The fact that these dealers recognized their errors and corrected them attaches considerable authority to the recital of their experiences.

The nine outstanding errors of these dealers were named as Careless Used Car Trading, Shop on Unprofitable Basis, Undercapitalization, Reckless or Bad Crediting, Improper Bookkeeping System, Neglect of Accessories as a Source of Profit, Failure to Survey Potential Market for Particular Car

Handled, Poor Location, Failure to Advertise.

These mistakes are named in the order in which they affected the greatest number of dealers. For instance, Careless Used Car Trading was the mistake common to the greatest proportion of the 146 dealers covered in this investigation.

The article in which these mistakes were named and analyzed was published in the May 27 issue of MOTOR AGE. The first article in the series, however, appeared in the May 6 issue and other articles were published May 20, May 17 and July 1. The last article contained extracts from the statements of many dealers telling how they discovered and corrected their mistakes.

The whole series of articles is well worth the thoughtful study of any man engaged in the automotive business.

Speeding Up the Used

Howard Organization Clears Second Hand Stock Every 22 Days at One of Its Branches—Some Howard Resale Tips

THE absolute essentiality of adopting and settling on a definite policy governing the handling of the used car has become more emphatic this year than ever before. For the distributor and dealer to protect himself against heavy losses, and to safeguard his reputation as a merchant entitled to public confidence, he must organize and install systematic business methods in his used car department of the most efficient character.

Without a well-planned policy, without efficient executive control and efficient direction of sales effort, and, above all, without the positive delivery of full value for money received, it will be increasingly difficult for any automobile dealer in any community to meet the demands of the day for successful automotive merchandising. The inter-relationship between new and used car selling has become so closely interwoven that neither the distributor or dealer, or even the manufacturer for that matter, can think of one without the other.

For a close-up appreciation of the character of policy, system, and business efficiency in used car merchandising that protects profits and builds and holds public confidence, the plan of operation of the Howard Automobile Company, Pacific Coast Buick distributors, offers an illuminating subject for study. In the Southern

Form 90

Take in No. _____ Job No. _____ Date _____

TIME TICKET ENVELOPE DEPT. _____

NAME _____ LIC. NO. _____

MODEL _____ MOTOR NO. _____ FRAME NO. _____

1st OPER:	1	Inv. of Equipment	
2nd OPER:	2	Cleaning and Spraying	
3rd OPER:	3	Motor	
	4	Cylinder	
	5	Crankcase	
	6	Bearings	
	7	Conn. Rods	
	8	Pistons	
	9	Timing Gears	
	10	Crank and Cam	
	11	Valves	
	12	Cooling	
	13	Exhaust	
	14	Fuel System	
	15	Steering	
	16	Front Axle	
	17	Front Springs	
4th OPER:	18	Rear Axle	
	19	Differential	
	20	Universal	
	21	Transmission	
	22	Clutch	
	23	Frame & Brackets	
	24	Rear Springs	
	25	Brakes	
	26	Tire Carrier & Tail Light	
	27	Lubrication	
5th OPER:	28	Electrical	
	29	Battery	
	30	Head Lamps	
6th OPER:	31	Body Metal Work	
	32	Fender Metal Work	
	33	Front & Side Aprons	
	34	Hood	
	35	Gas Tank Metal Work	
	36	Radiator Shell	
7th OPER:	37	Disassembling Nicks	
8th OPER:	38	Top	
	39	Curtains	
	40	Running Boards	
9th OPER:	41	Painting	
10th OPER:	42	Assemble Nicks	
11th OPER:	43	Tune Car	
	44	Testing	
12th OPER:	45	Tire Change	
13th OPER:	46	Trimming & Uphol.	
14th OPER:	47	Clean & Paint Final	
15th OPER:	48	Washing Car	
	49	Polish Car	
	50	Speedometer	
	51	Windshield	
	52	Wheels	
	53	Accessories	
	54	Final Inspection	
	55	Delivery	
	56	Cleaning Shop	
	57	Instructions	
	58	Steel Docks	
	59	Show Room Floor	
	60	Unloading Cars	
	61	Down	
	62	Driving Cars	
	63	Non-Productive	
		TOTAL	

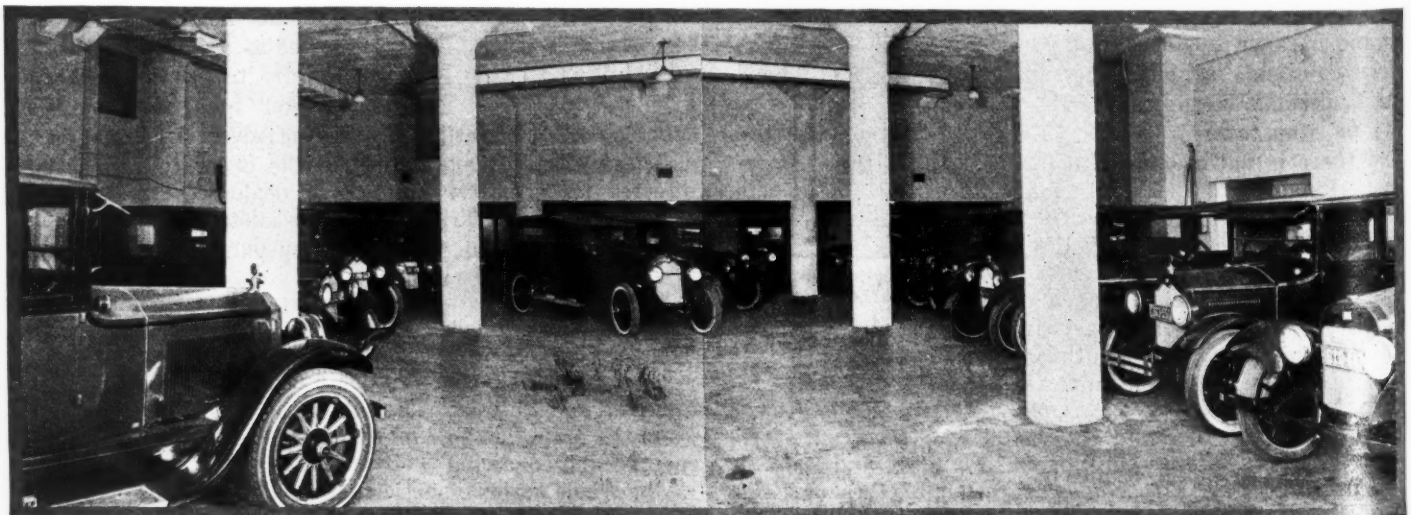
Form used by Howard Automobile Company's appraiser when turning a car taken in over to shop for reconditioning.

California headquarters at Los Angeles of the far-flung Howard organization, which distributes Buicks in the states of California, Oregon and Nevada, H. W. Tuttle, general manager under Frank Howard, has achieved remarkable results in the handling of the great volume of used cars at this plant, which last year totaled 2724.

"Turnover is the big thing in the successful handling of used cars," says Mr. Tuttle. "To gain the necessary turnover, systematic efficiency must be applied in the used car department to the end that all cars taken in will reach the sales floor in the least number of days. Much of the loss sustained in recent years has been due to the depreciation occurring while the cars remained in the dealers' possession—depreciation which could have been for the most part avoided with organized system functioning along well-defined lines."

In the Los Angeles Howard organization, there is systematic efficiency of a high order surrounding the used car from the time it is taken in on a new car sale until it moves on to another owner. There are no used cars stored away, even for a day, waiting for someone in authority to issue instructions regarding their future course. Every used car received at the Los Angeles Buick institution goes through a definite schedule of

Used car display floor at the main store of the Howard Automobile Company, Los Angeles, the Howard plant last year handled 2724 resale vehicles



Car Turnover

By ROY ALDEN

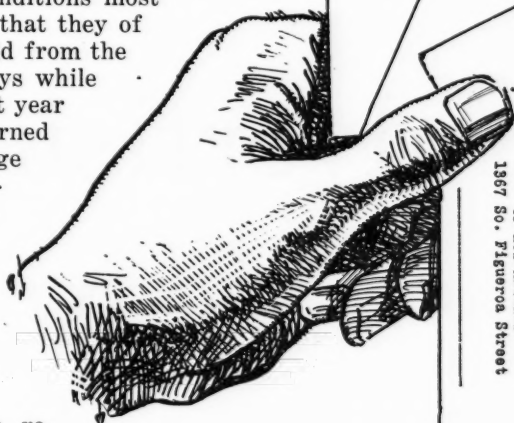
operations which commences as soon as it is formally turned in by the owner.

When it is considered that the Howard Company completely reconditions most of its cars, which means that they of necessity must be withheld from the sales floor for several days while in the shops, and that last year the Los Angeles firm turned its used stock on an average of every 22 days, it becomes readily apparent that no time is lost in this institution in clearing its used merchandise. Action is demanded by Mr. Tuttle's system and action must be delivered, because a daily report is required each day giving the status of every used car in stock from the time it is received until it is sold. In other words, if a used car came in yesterday, a report arrives at the desk of Manager Tuttle the first thing this morning detailing what was done with it up to 5:30 p. m. last night. Daily reports will continue to reach him giving specific information on each used car until it passes from stock. There is no chance for any car to become sidetracked, because every used car in stock must be fully accounted for and its status described to the executive head of the business every morning. And, incidentally, the executive head of the Howard Company in Los Angeles, recognizing the used car department as of major importance, gives it his closest attention.

When the used car is first received by the Howard Company the appraiser, who is a mechanical expert of exceptional ability, definitely allows the shop a certain number of days to accomplish a certain reconditioning program, which he outlines on the face of the time ticket envelope. The shop is "flat-rated," just as the individual mechanic is flat-rated on certain operations. If the shop fails to deliver according to the schedule established, there must be good reason.

From his broad experience and exhaustive study of the subject of used car merchandising, Mr. Tuttle is firmly convinced that the used car department must have its own shops, its own mechanical force, and its own sales force under capable executive direction in order to function successfully. Selling used cars, says Mr. Tuttle, is a big job, that must be handled in a big way, without any division of interest.

The Howard Automobile Company of Los Angeles sells all its used cars from enclosed showrooms. It uses no open lots. There are three used car showrooms, one at the main store; another in a section of town where the patronage of the lower purchasing power is centered, and another in the general automobile district where used cars are largely featured. There are 16 salesmen em-



DID YOU FIND THE CAR YOU WANT?

If not in this list, hesitate to come in. We have the right car for you at the right price and at the right time.

WHY WE SELL MORE THAN \$2,000,000 WORTH OF USED CARS IN A YEAR!

Such bargains as these attract tremendous buying volume. Our used car stock is constantly changing because of eager buyers ready to pick up such bargains as these we offer now.

THE ORGANIZATION BACK OF YOUR TRANSPORTATION

Here are some of the genuine used car buys that you are dealing with. Largest distributor of a square miles in the world. An indication of a square miles tomorrow!

SUCH BARGAINS AS THESE WILL REMAIN HERE ONLY A FEW DAYS!

That is why we are notifying you - to give you the opportunity of making a selection. Here are some of them to be offered at these offices tomorrow!

HOWARD AUTOMOBILE COMPANY OF LOS ANGELES 1367 So. Figueroa Street

Used car salesmen for the Howard Automobile Company, Los Angeles, are supplied with such cards as these to fill in and mail to prospects

ployed who sell used cars exclusively, under the direction of R. L. Roberts, sales manager in charge of the used car department. New car salesmen are required to sell two used cars each a month. This quota is given to the new car salesmen, says Mr. Roberts, in order that they will not lose sight of the part used cars play in the automobile business. Roberts declares that to completely segregate selling effort, relieving the new car salesman of any responsibility for moving used stock, is liable to lessen his interest and cooperation in the successful merchandising of used cars. All salesmen receive the usual 5 per cent commission on used car sales, with a \$15 minimum guaranteed for any one transaction.

The Howard Company bases its appraisals on a printed schedule of selling prices for every make and model of car. These prices are fixed by Mr. Roberts, and revised at intervals according to the dictates of supply and demand. The first notation the appraiser makes on his appraisal sheet is the selling price of the car, as shown on the record issuing from Mr. Roberts' office. The appraiser then determines the cost of reconditioning the car after a careful investigation, and the cost of selling, which is a fixed amount. The customer is allowed the "net value."

Mr. Roberts declares that only by first establishing the selling price can the real value of the car be properly arrived at.

"Our schedule of selling prices is determined by the market, and they serve as an absolute guide in all appraisals," he says. "We don't figure up to a possible selling price, but figure down from a known selling price to the net value. No dickering or bargaining with owners. No elasticity or flexibility. The net value as systematically determined stands unchanged. We endeavor to give the owner every cent his car is worth.

(Continued on page 34)



C. W. RICHARDSON
Service manager of Brownell Auto Co.

IN answer to the question "How Shall We Draw the Attention of the Public to Our Service Department?" propounded by Ted Brownell, president of the Brownell Auto Company of Birmingham, Ala., his advertising man said:

"Why not try telling the customers some real facts about the service? Why not stop indulging in generalities and give them some real information?"

Mr. Brownell said that he would try it, and the result of the decision was a series of advertisements and publicity stories that have been much discussed and are conceded to have real business building value. Their value as business builders would not have been nearly so great a num-

Advertising Shop New Cus

*Illustrations of Time Saving Tools Together
with Explanation of Their Use In-
creased Business One-Third
for Birmingham Shop*

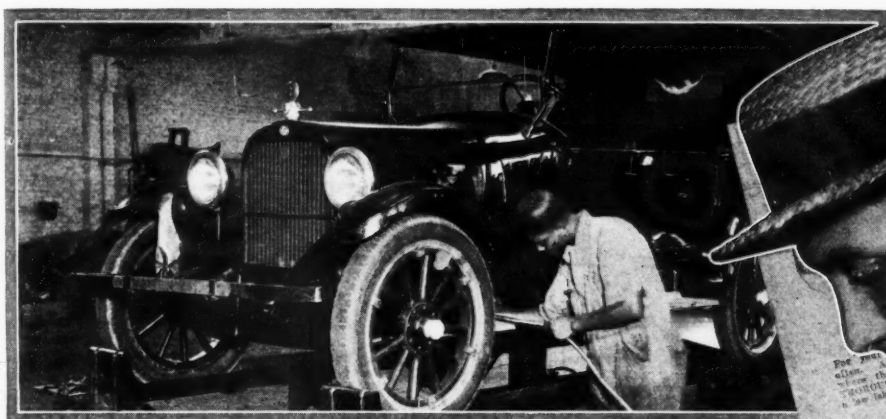
HERE is a business building idea for dealers and service shops. While hundreds of thousands of dollars are being spent to advertise new and used cars for sale, there is little or no advertising being done to attract profitable business to the shop. The well equipped shop, operating on flat rate and with good management, is in a position to be a very profitable enterprise. Local newspaper advertising of the nature used by the Brownell Auto Co., brings in desirable service customers.

ber of years ago when people knew very little about the mechanism of automobiles, but today when a general knowledge of motor workings is the rule a series of this sort is very intelligently received.

To give the advertisements added accuracy and weight the copy was secured from the service manager, C. W. Richardson, who also signed the publicity. Every advertisement was illustrated with a photograph showing the operation featured.

The series ran every Sunday for two months, five advertisements and four publicity stories in all. The general idea was to tell the people of Birmingham what the automobile mechanic does to their cars and how he does it.

Each one of the advertisements featured one repair operation and gave a photograph of one of the mechanics in the plant performing the operation on a car. The first advertisement of the series was an exception to that rule. It gave a photograph of the plant, which is still comparatively new, and told in a general way of the services and



Inside "Dope" On Dodge Car

"Doping" is essential to the long life of a car. So is thorough "doping."

Cars are brought to our new repair shop on E and 24th street, south, to be doped. The grease rack shown above is located on the underside of chassis can be

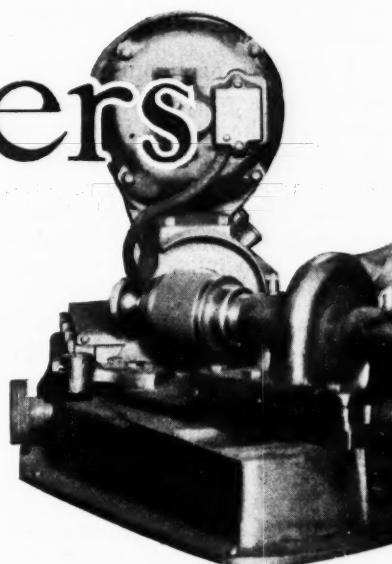
grease cups under a pressure means of a pump the grease is matter and

For more information, write the BROWNELL AUTO CO. 1000 10th St. N. W. Wash. D. C.

Only Authorized Dodge Plant in City

Equipment Brings in Customers

Photographs on these pages were used by the Brownell Auto Co. to illustrate newspaper advertisements calling attention to the shop's superior equipment for rendering complete maintenance service.



the fact that they would be featured in a series of advertisements.

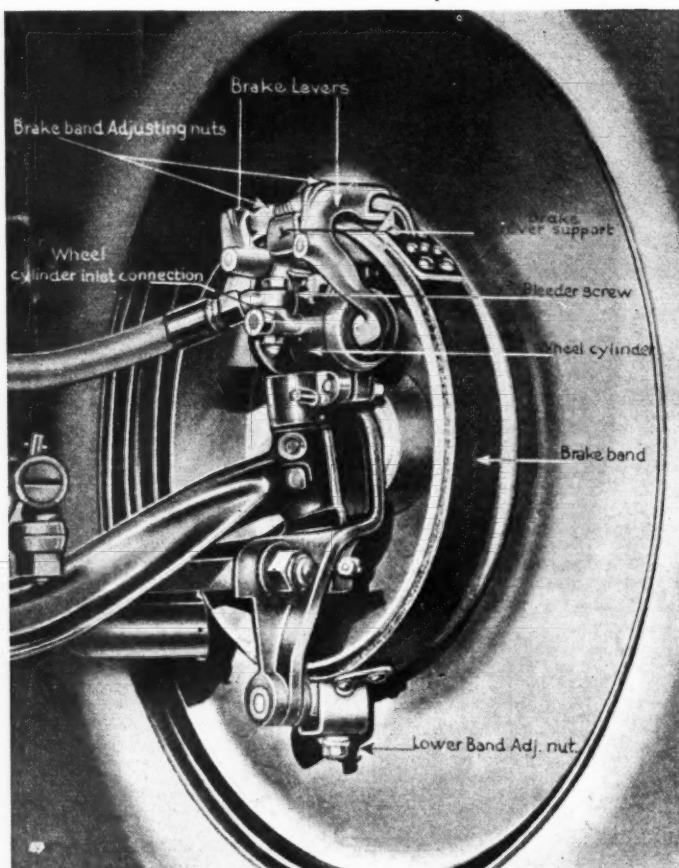
There followed advertisements on relining the brakes, doping the car, grinding the valves, removing the carbon, preventing the accumulation of carbon, and checking up on the condition of the new car. The copy appeared in the Sunday editions of a local paper for five successive Sundays and the publicity appeared in the same editions, each ad being supplemented by the publicity explanation.

"Some of our customers told us that they looked for the publicity every Sunday," said Mr. Richardson. "They were genuinely interested in the information that it contained, they said, and we believed it, for the number of cars being serviced in the Brownell service department averaged about 75 a day at the beginning of the series, and during the time it was running rose to 100.

"The pictures that appeared with the copy showed the operation of the electric tools and machinery used in our plant for repairing and servicing the cars. They are good for all cars but our specialty of course is the Dodge Brothers car. The fact that we can get work done with speed and thoroughness that can not be duplicated with the hand driven tools was emphasized in the copy and the publicity.

"So far I believe that this series of advertisements is

the best that we have ever used for the purpose of exploiting our service. In it we not only made general statements as to the superiority of our service but we backed them up with photographs and explanations showing just how it is done. The popular appeal of this class of advertising for the automobile man is growing and I believe it will continue to grow."



Hydraulic brake installation on front wheel of Moon car. The various parts are clearly indicated

WHAT does the motoring public want in brake service? Not just a good dependable brake but also a brake with low operating expense. The public is always glad to assume fair charges for labor, but only when they have the assurance that the adjustments have been made properly.

In order for any brake to render maximum efficiency it requires a certain amount of well directed attention from time to time. Adjustments demand intelligence and this is particularly true of hydraulic brakes. It is, therefore, very important that the man who takes the customer's order, be well posted, and able to locate trouble.

Hydraulic brakes are being constantly improved and refined to meet that ever-growing demand for a brake with low maintenance expense. The small pistons in the cylinders are now made of aluminum in place of cast-iron. Rubber boots now protect the pistons from road-wash and grit. The rubber cups which seal the pistons are made of nonblooming rubber free of sulphur. Steel parts throughout the system have been substituted for brass, and where not possible, have been copper-plated to eliminate corrosion. These are only a few of the many improvements which have taken place.

The success of the present day hydraulic brake system

Servicing Hydraulic

Intelligent Testing, Use of Pure and Lubrication of Oper

depends greatly on the nature of the fluid or solution used in filling the system. This point cannot be stressed too far. The solution recommended and prepared by the manufacturer should be used. A solution of 50 per cent pure alcohol and castor oil does well when it is not possible to obtain a solution mixed and supplied by the manufacturer.

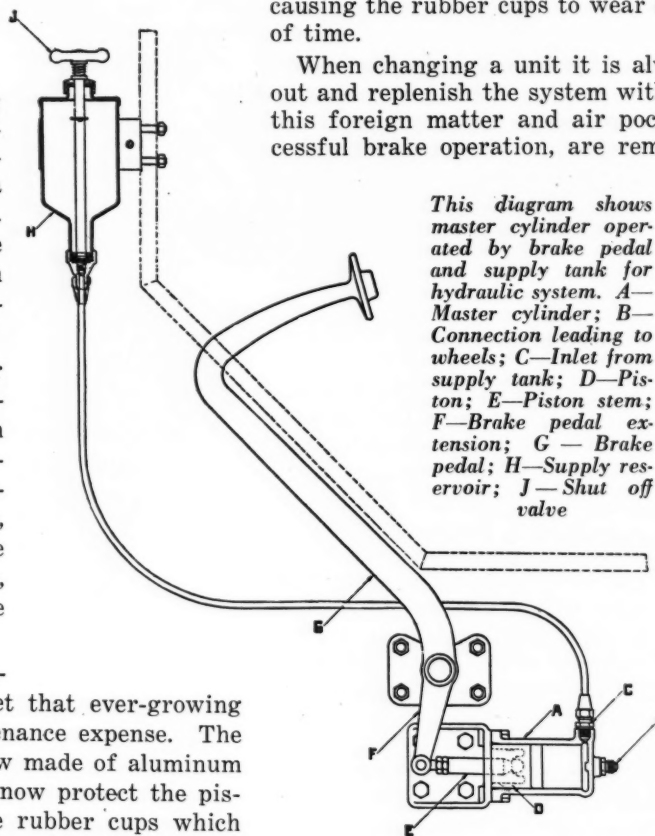
A mixture of impure solution has a bad effect on the rubber cups which seal the system, and will corrode steel parts and the system in general. It has a chemical action on vulcanized rubber, causing the sulphur to leave the rubber and form sulphur crystals and sediment deposits in the transmitting lines and cylinders. The corrosive substance floating in the solution acts as a cutting abrasive causing the rubber cups to wear excessively after a period of time.

When changing a unit it is always good policy to flush out and replenish the system with new solution. In doing this foreign matter and air pockets, detrimental to successful brake operation, are removed. Filling the brake

system with the proper solution lowers the brake maintenance expense to the customer, and insures a greater margin of safety. To fill the system with inferior solution is nothing less than criminal.

When checking the brake system for difficulties, it is good policy to question the car owner and learn from him the nature of the trouble encountered. A definite conclusion should not be reached until a careful inspection has been made. This is good practice, because other things may exist, of which the owner is not aware.

Inspection should always include examination of all brake band anchor brackets for free action on the pin, accumulated dirt and rust, and proper adjustment. It is very important that the bands move freely at these points, so that the full surface of the brake band will wrap the



This diagram shows master cylinder operated by brake pedal and supply tank for hydraulic system. A—Master cylinder; B—Connection leading to wheels; C—Inlet from supply tank; D—Piston; E—Piston stem; F—Brake pedal extension; G—Brake pedal; H—Supply reservoir; J—Shut off valve

Brakes

Fluid, Maintenance of Lining and Wearing Parts Are Essential

drum when the brakes are applied, and the bands will release and not over-heat when the brakes are released. When the anchor brackets are frozen, due to lack of lubrication and rust, only a small portion of the brake-band comes in contact with the drum, greatly decreasing the frictional braking surface. In order to obtain sufficient braking action, it is therefore necessary for the car operator to apply a much greater pressure to stop the car in any given distance. This also applies to brake-lining which has become hard and glazed, due to road-wash, heat, high rivets and frictional contact with the brake drums.

The hydraulic brake system of transmitting power to the brake bands under conditions described, is, therefore, called upon to render a service which, in some instances, amounts to a great deal more than is normally required to secure the same braking effect under favorable conditions. When the hydraulic brake system or any other power transmitting system for that matter, is required to render a service greatly exceeding the limitations intended by the manufacturer, adjustments become more necessary and frequent.

When changing a unit, it is always best to place the system under test, which can be accomplished by inserting a V-block between the brake pedal arm and the floor board. A very good test, however, is to take the car on the road, and subject the system to a number of stops at frequent intervals, noting any loss of liquid by corresponding drop in the brake pedal. Should the system indicate loss of

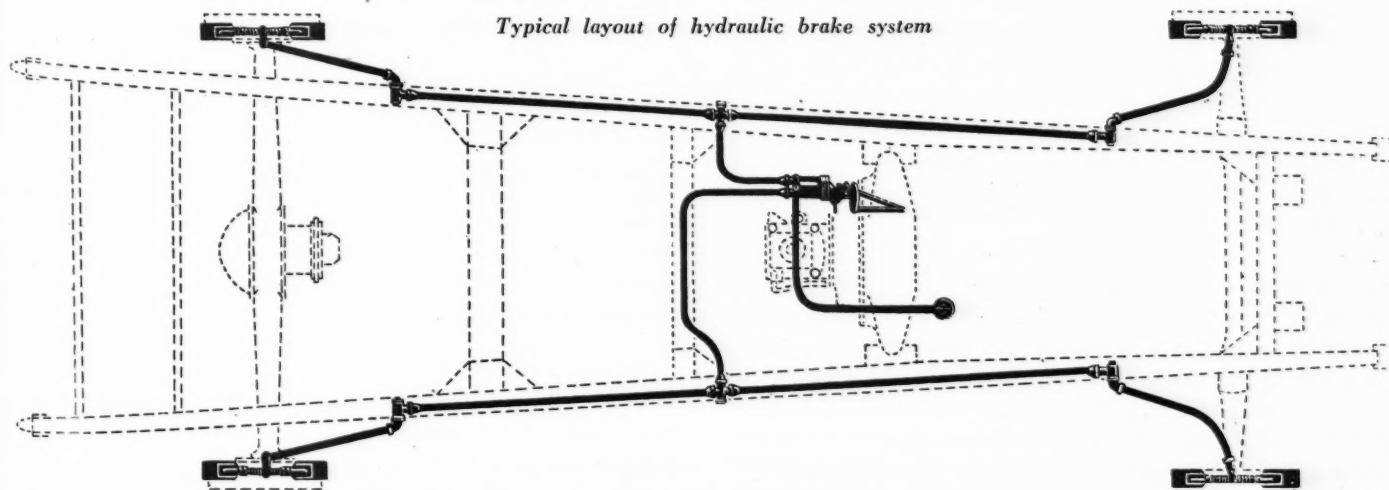
liquid, it should not be assumed that the loss is due to a leaky cylinder. Very often it is nothing more than a loose connection at one of the tubing make-up joints. If no leaks are found, in inspecting the tube connections, and the cylinders show no external signs of leakage, the fluid may be escaping back into the reserve supply tank.

The pump plunger needle valve assembly in the reserve tank should be screwed down firmly. When in this position if there is an indicated loss of liquid, a good temporary repair can be made by inserting a good stop shut-off cock in the supply line leading to the master cylinder.

Rendering satisfactory service to the car owner does not start by telling the car owner that new equipment, brake bands, etc., are needed to correct some condition that may exist. It is the easiest way out, but is it in keeping with sound automobile repair maintenance service? A motor develops a knock. The answer is not a new motor, but a careful inspection eliminating the knock and the cause, at the least possible expense to the owner. There are always exceptions, and these must be judged according to their individual merits.

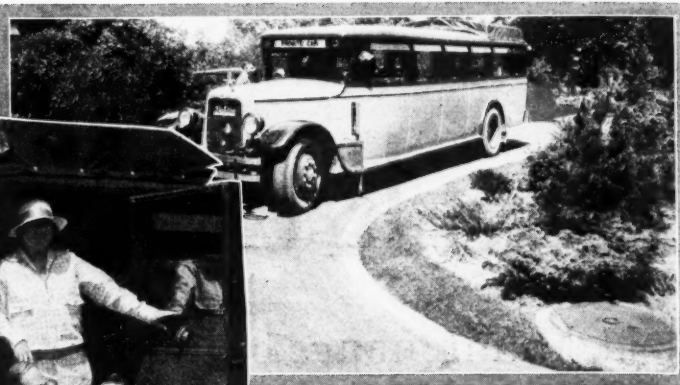
Grunting and squeaking brakes have always been more or less a sort of annoyance to the motoring public, as well as the repair man. Many opinions have been expressed as to the cause and the cure. It has generally been conceded that brake squeaks are caused by certain areas or surfaces of the linings being subjected to local high pressure on the brake drum. This pressure creates vibration beyond that which the lining is able to absorb or cushion out. New lining may be applied but often this only effects a temporary cure. In most cases, if the brake bands are adjusted for clearance and rounded properly with free action, they will not squeak. Often, a drop of castor oil applied on the surface of the brake-drum, will effect a cure and not lower the efficiency of the brake materially. Great strides have been made in recent years toward building brakes with a more uniform application of wrapping and expanding action to the drum, and this has done more than anything else to eliminate brake squeak.

Typical layout of hydraulic brake system





The above illustration shows the interior of Motor Coach used by C. F. Kettering. The equipment included a Frigidaire ice machine, a radio, an electric phonograph, kitchen equipment and other modern conveniences.



Miss Ohio, the Yellow coach used by C. F. Kettering for 10,000 mile tour of the west.



Four members of the Kettering party. Seated, left to right: Eugene Kettering, C. F. Kettering and Adam Schantz. Mrs. Kettering is standing.

Uses Specially Equipped Motor Coach for 10,000 Mile Tour

C. F. Kettering of General Motors Corporation and Party Provide Themselves with All the Comforts of Home on Long Trips

THE 10,000 mile motor coach tour undertaken this summer by C. F. Kettering, General Motors Corporation vice president in charge of research, and members of his family and friends, is a striking demonstration of the practicability and comfort of automotive passenger travel.

The trip was made in a specially equipped coach christened Miss Ohio and made by the Yellow Truck and Coach Manufacturing Co.

Members of the party besides Mr. Kettering were Mrs. Kettering and their son Eugene, C. S. Mott, a vice president of the General Motors Corporation, and three personal friends of the Ketterings.

The itinerary led through Ohio, Indiana, Illinois, Missouri, Kansas, Colorado, New Mexico, Arizona, the Grand Canyon, California, Oregon, Washington, Canada, Montana and the Yellowstone National Park.

The coach was especially equipped by Mr. Kettering for the trip, having in mind the comfort of the passengers and the ease with which the coach could be returned to regular service upon completion of the trip. The equipment included a Frigidaire ice machine, a radio, an electric phonograph, compartments for personal effects, bags containing

blankets and pillows for each passenger, folding cots, reclining leather chairs, and kitchen equipment. A large tent was carried on top. Hot water was furnished by a 10-gallon tank under the hood of the engine.

The special Delco electrical installation is of unusual interest. Four 6-volt Exide batteries were connected in series parallel giving a 12-volt double capacity combination. Two batteries were on the right fender and two on the left fender. The generator had a rating of 15 volts and delivered 600 watts.

The ignition distributor was of the full automatic type using a jump spark and of special design for motor coach engine equipment. The ignition coil also was of special motor coach design with the coil windings enclosed in waterproof bakelite case. The primary circuit was 12 volts and the resistance unit is mounted on the coil.

A special motor coach switch unit for controlling all lighting and ignition circuits was designed and placed on the instrument board, easily visible to the driver.

All external and internal lights, the Frigidaire motor, the phonograph motor and the radio were connected with the batteries, current for which was supplied by the Delco generator.

Advice on Renting Cars to Drivers

Replying to Inquiry of Garageman MOTOR AGE's Legal Counselor Enumerates Points to Be Observed for Protection Against Loss and Damage

By WELLINGTON GUSTIN

YOUR problem in renting cars to customers for their own use is one of negligence. If you show due diligence in the transaction of renting a car, you are not chargeable with damages arising out of accidents caused by the negligence of your customer.

The essential things to relieve you of any responsibility in case of damages caused by a customer are these: (1) See that your customer is a competent driver; (2) see that you provide proper vehicle in proper condition.

(1) A garage owner is not liable where he rents his car to one who drives it himself unless the hirer is manifestly unfit—as in the case of a youth below the statutory age for drivers, or an intoxicated person—to drive and control it. Where the hirer is a man accustomed to the use of automobiles his competency is ordinarily established sufficient to relieve the garage owner. Safety of the public demands that the garage keeper inquire into the competency of the customer as driver.

(2) The garage owner must provide a proper vehicle in such good condition and order as to offer no menace to the safety of others on the road. It is essential that the vehicle shall be supplied with all proper safety appliances, and be kept in such good order and repair as well, on all occasions, confer instant and complete control upon the operator. And, of course, the statute governing lights, brakes, horns, etc., must be complied with in furnishing a proper car for hire.

But let it here be said that although failure to provide the above requisites of a safe machine to a customer implies negligence, every accident that may occur to a customer does not render the garage keeper—or the hirer

THE QUESTION

Following is the question put to **MOTOR AGE** by a garage proprietor:

We are thinking of starting a drive-yourself system in connection with our regular garage business and would like to have advice as to how to be protected in case we rented a car to a person, who in driving the car killed or injured someone or himself. We would like to know what the holding of the courts has been where the driver of the rented car was the cause of property loss; would the driver be held responsible or the owner of the car?

either—liable. It is necessary for a complainant in a case for damages to show that the negligence of the garage keeper in failure to furnish a proper machine as outlined was the cause of the damages. The injured party may have been guilty of the negligence in causing the injury.

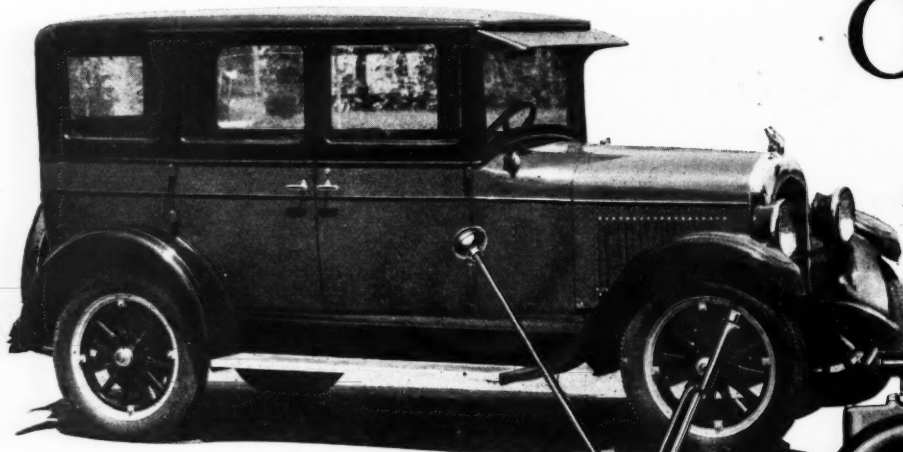
Or the fact that the customer was driving a defective machine, may not have been the cause or the attributing cause. To illustrate, the drivers of one of the cars may have been driving on the wrong side of the roadway and this caused the loss, which has no connection with the defective machine.

But the garage keeper is only safe in renting a proper machine in good condition. He is not liable for a latent defect, as where a brake rod breaks, but he is responsible where he rents a car known to be defective. The garage keeper will be held responsible for renting a defective car, if by exercising a high degree of diligence he might have known of the condition. One cannot buy cars and continue to let them out from time to time without examination till they should break and result in accidents; but it is the owner's duty to prudently examine and keep them in repair at all times before they are let out. If they are "suffered to go out to a customer with a defect that could be discovered by a prudent, careful, particular and critical examination by a man skilled in such matters," the owner would be responsible for any damages caused both to the hirer and to third persons.

The foregoing rules apply regardless of whether the loss be personal injury or property damage. Where the hirer of the rented car was the cause of loss either to third parties or to the garage owner he is responsible. If the hirer injures the rented car he is liable.

New 4-Cylinder Chrysler Offered at

By LESLIE S. GILLETTE



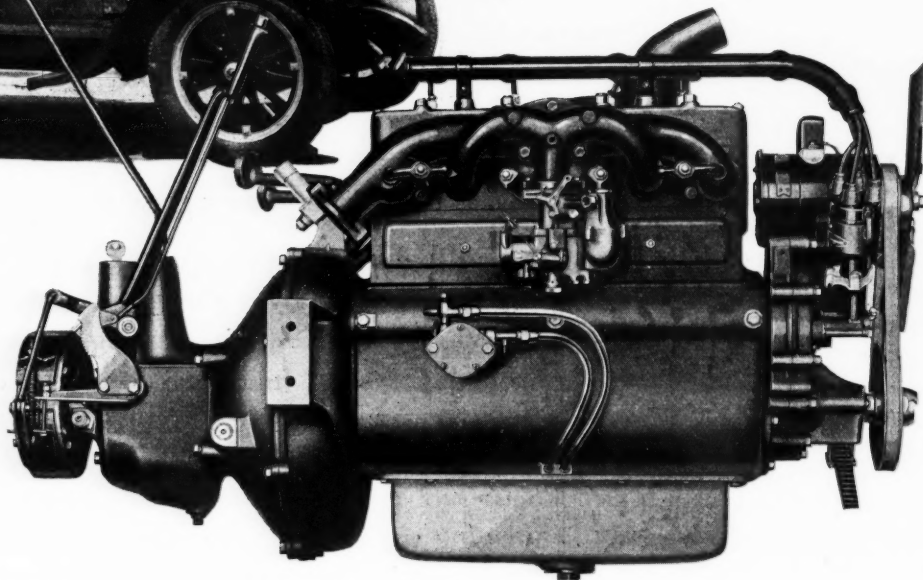
The above photograph shows the new 4-door sedan which lists at \$830. The other five passenger closed car, a coach, is priced at \$780

COMPLETING original plans for a line of cars in four distinct price classes, the Chrysler Sales Corp. introduces this week the latest and final addition to their group of cars, a low priced four cylinder model designated as the "50." Contrary to general expectations, the "50" is not a "light" type of car and while it is considerably smaller and lighter than any previous Chrysler cars, it retains the same general body lines and chassis design which have characterized the earlier models. With the addition of this new car, the Chrysler line will comprise four separate chassis, namely, the "50," "60," "70" and "80" series and twenty-two different body styles.

The salient feature of the "50" model is the adoption of all-steel fabrication for the three closed bodies forming the line. These bodies of Budd manufacture comprise a coupe, coach and sedan listing at \$750, \$780 and \$830, respectively, and they mark the first of the Chrysler cars to be equipped with all-steel type bodies. Differing from the other three Chrysler chassis, two-wheel mechanical brakes are standard equipment on the "50." For the export market a touring car priced at \$750 f. o. b. Detroit is offered also.

The "50" model, except for being smaller, bears the closest resemblance in appearance to the "58" line, which it replaces, and one of the outstanding features of the new bodies is the unusual amount of interior room.

All units making up the "50" chassis have been designed especially to conform to conditions found in the lighter four cylinder field and to provide maximum ruggedness coupled with low operating and service costs. The main chassis features are a 3½ by 4½ engine of 21.03 rated h. p., single plate clutch with conventional transmission in unit with engine, rubberized universal joints, semi-floating rear axle providing a 4.7 to 1 ratio, 29 by 4.75 in. balloon tires, an



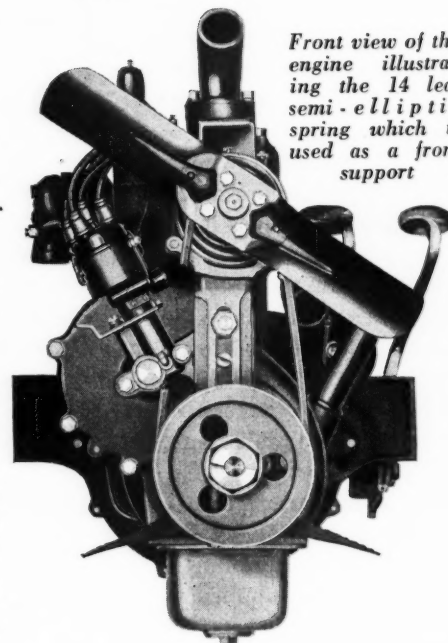
Right side of the "50" power plant showing the oil pump mounted on the outside of the crankcase and driven off the camshaft. This engine has a bore and stroke of 3½ by 4½ in. and develops 38.1 b.h.p. at 2700 r.p.m.

overall length of 153 in., or a wheelbase 106 in., and a standard tread.

Good for 50 M. P. H.

In line with the company policy of designating the chassis models by numerals indicating the high speed of the respective series, the new car is capable of slightly better than 50 m. p. h. with full load of passengers. Due to reductions in the unsprung weight permissible with the lighter type of car, the "50" provides very comfortable riding over country roads. A representative of MOTOR AGE, driving one of the new coaches over rough dirt roads, was able to maintain a steady 35 to 40 m. p. h. without any unpleasantness experienced by the passengers or driver, although the car was not fitted with shock absorbers. A speed of 52 m. p. h. was attained on a level concrete road with no signs of undue noise or vibration being apparent, and the two-wheel braking system appeared to be entirely adequate to meet all emergencies.

Certain desirable characteristics of the former "58" powerplant are retained in the "50" engine. While the bore of 3½ in. is common to both, the stroke has

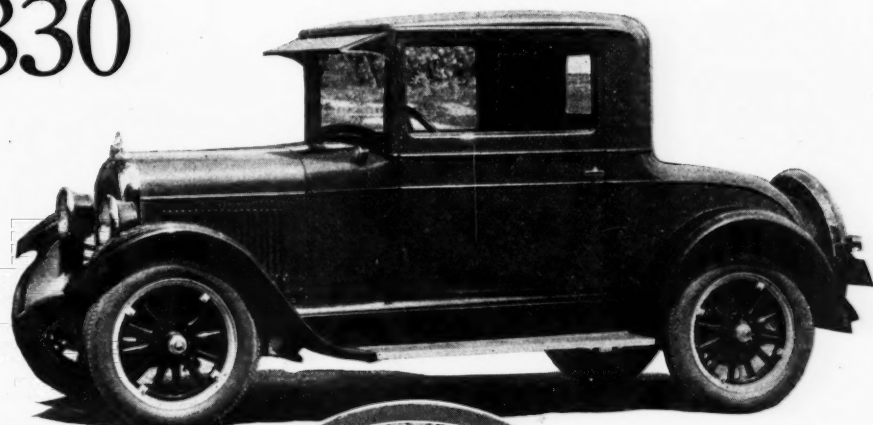


Front view of the engine illustrating the 14 leaf semi-elliptic spring which is used as a front support

been reduced by ¾ in. to 4¼ in., giving a piston displacement of 170.3 cu. in., as compared with 185.7 cu. in. displacement of the "58." In spite of this reduction (the N. A. C. C. h. p. rating remaining unchanged at 21.03) there is relatively little difference in maximum h. p. output, the "50" developing 38.1 b. h. p. at 2700 r. p. m., with the maximum speed 3,900

With All-Steel Bodies \$750 to \$830

*Latest Addition, Known as
the "50," Completes Line
of Four Distinct Chas-
sis Models Covering
Wide Range in
Price and Size*

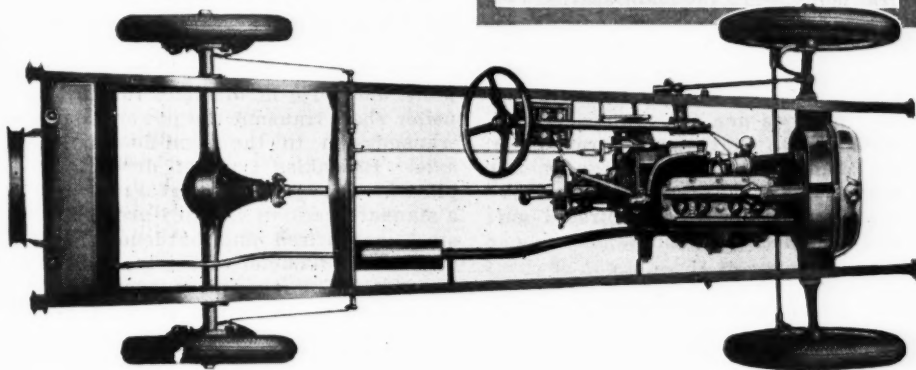


r. p. m. With a compression ratio of 4.0 to 1, the torque is 100 ft. lb. at 1200 r. p. m. Due to refinements in design and the shorter stroke the weight of the "50" powerplant is considerably less than that of the "58."

Spring Used in Engine Suspension

Three point engine suspension embracing the front semi-elliptic spring adopted originally on the "58" is used on the smaller car. At the rear end, the arms formed with the flywheel housing are secured by two bolts to gusset plates riveted to the side frame channels. The semi-elliptic spring, composed of 14 leaves, is bolted to the valve gear cover with the outer ends of the spring resting on the frame cross member. Engine design is conventional throughout, the block and crankcase of cast iron integ-

Plan view of the "50" chassis. Including the rear engine support four cross members are provided. The depth of the side members is 5 in. and the stock is 9/64 in. thick. Flanges are 1 3/4 in. wide at the center



rally formed, the cylinder head detachable and the oil pan of pressed steel.

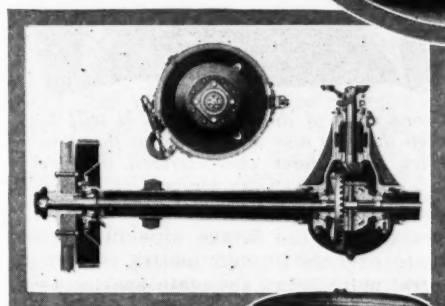
Three bronze babbitt-lined bearings support the balanced crankshaft, the dimensions of the main journals being:

	Front	Center	Rear
Length	2 1/8	1 5/8	2 1/8 in.
Diameter	1 7/8	2 1/4	1 7/8 in.

Thrust is taken by the rear bearing and the shaft is drilled to allow force feed to the connecting rods. The latter are of "I" section having a 7 7/8 in. distance between centers with the dimen-

Rear view of the new all steel bodies employed on the "50" Chrysler cars. The neat mounting of the spare tires carrier will be noted

The semi-floating rear axle employed on the Chrysler "50"



The illustration above shows the 2 passenger coupe of all steel construction which lists at \$750. On the "50" model 29 by 4.75 in. balloon tires are used

the distance from the center of the pin to top of head 2 in. Cylinder bores are finished by reaming and honing, and the fitting clearance for the piston at top of skirt is .003 to .0035

in. The pins, 3/4 in. diameter by 3 in. long, case-hardened and ground, are clamped in the rod with the bearing in the piston being plain.

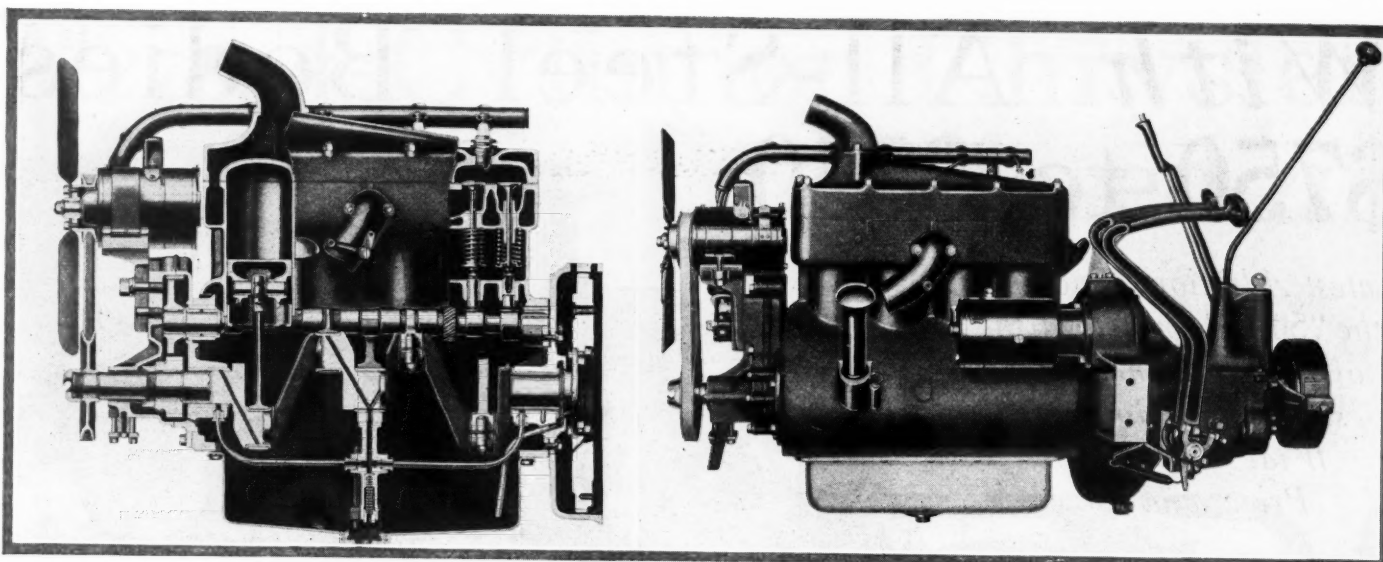
Gears Used for Front Drive

The front end drive consists of two helical gears, the larger being of steel with the crankshaft gear of gray iron. Front and rear bearings for the camshaft are babbitted with the center bearing machined in the case. Dimensions of these bearings follow:

	Front	Center	Rear
Diameter	1 1/4	2	1 1/4 in.
Length	1 1/8	1	1 3/8 in.

The oil pump gear cut on the camshaft is located between cylinder No. 3 and No. 4. Guides for the push rods are formed integral with the case, while the valve guides are removable. The former, of the mushroom type, are made of special carburized manganese steel, while the inlet valves are composed of a Wilcrome head welded to a steel stem with the exhaust valve made of chrome-silica steel. Wilcrome material used in the inlet valves is a new development and basically it is a nickel alloy. Both valves have a clear diameter of 1 1/8 in., the stem diameter is 3/8 in. and the lift 3/8 in. Recommended tappet clearance for the valves is exhaust .006 in. and .004 in. for the inlet.

Water circulation is by thermo-syphon system. The radiator is of the vertical fin and tube type and the entire water capacity of the system is 3 1/2 gal. A "vee" belt off the crankshaft pulley



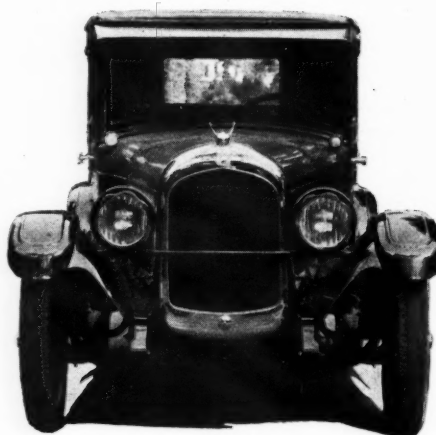
Sectional view of the "50" engine showing the hollow crankshaft with the oil header leading to each of the three main bearings. Pistons are of Lunite with the pin clamped in the rod

drives a combination generator and radiator fan unit, adjustment being provided for by raising the generator cradle through the loosening of a nut which secures the entire cradle mounting to the front cover. The two-bladed fan of 17 in. diameter is attached to the end of the generator shaft.

Remy Electrical System

Remy make units are employed in the electrical system. The generator, already referred to, is of the conventional third brush type and the starter motor on the left side of the engine engages with the teeth cut in the flywheel by an in-board Bendix drive. The entire ignition unit, including the bevel gear drive, is mounted on the front gear cover by two bolts and connection is made by a tongue on the end of the horizontal shaft which fits into a corresponding groove in the end of the camshaft. The distributor, provided with a semi-automatic advance, has a single breaker arm and carries the condenser on the outside of the base. A motor driven horn operated from the center of the steering wheel is used, while the battery is of the 6-8 volt 90 amp. hr. type. Firing order is 1-3-4-2. Fuel is delivered to the Ball and Ball plain tube carburetor from the 11 gal. Terne plate tank at the rear by a Byrne-Kingston "Oil-Vac" vacuum tank. The main feature of this system, which was incorporated also on the "58" chassis, is that the supply of fuel to the carburetor is automatically shut off if the oil pump ceases to function. A single adjustment for idling only is provided on the carburetor and the mixture in passing to the cylinders encounters a hot-spot formed in the exhaust manifold.

Full oil pressure to the connecting rods and crankshaft bearings is provided by a gear pump mounted on the outside of the engine on the right and driven by spiral gears off the camshaft. Exterior pipes connect the pump with the bearing header and oil sump, a screen being pro-



Front view of the new "50." It will be seen that the new model retains the same lines which have characterized the previous Chrysler cars

vided around the intake pipe in the oil pan to exclude foreign matter. From a central point below the main bearing two copper pipes deliver oil to the front and rear bearings, while the timing gears are lubricated by a direct oil lead from the front main bearing. The holes in the connecting rods and the crankcase mist is employed to lubricate the remainder of the engine. A bayonet gage on the same side as the oil filler shows the contents of the pan, which requires 1 gal. to fill to the maximum mark.

Single Plate Clutch

Both clutch and transmission carried in unit with the engine are similar in design to those employed on the former "58" model, although slightly smaller and lighter. The clutch is of the single dry plate type, comprising a pressure plate assembly with six pressure springs, three release levers provided with knurled adjusting nuts spring locked, and a drop-forged steel splined hub. A stationary sleeve carries the clutch release bearing which is of the radial ball bearing type. The driven disk is 8½ in. diameter and carries a special woven asbestos composition fabric facing riveted to each side. All gears in the three-speed selective-type transmission are of

This left side view of the "50" engine shows the method of driving the combination generator and radiator fan by a "vee" belt. The rear engine supports formed integral with the belt housing can be seen as can the semi-elliptic spring front support

special chrome steel. At the rear the mainshaft is mounted on a single row ball bearing and at the forward end is in a bronze bearing located in the main drive gear. Another single row ball bearing of Federal make, the same as the rear bearing, is employed to support the main drive gear shaft at the rear, while at the forward end it is carried in a plain bronze pilot bearing in the flywheel. The counter shaft gears, formed integral, are carried on plain bronze bearings. The gear ratios employed on the "50" transmission are as follows:

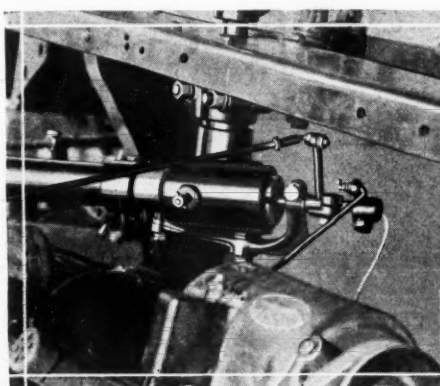
High	1.00 to 1
Low	3.06 to 1
Intermediate	1.90 to 1
Reverse	3.76 to 1

A lock of approved design is built into the transmission gear shift lever housing.

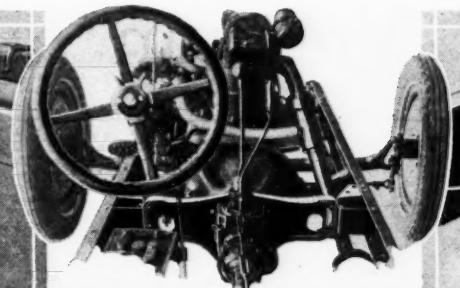
Two flexible fabric-rubber universal joints and a 1½ in. diameter tubular propeller shaft transmit the power from the transmission to the semi-floating rear axle. Hotchkiss type of drive is employed. The spiral bevel gears providing a standard ratio of 4.70 to 1 are of nickel steel, carburized and hardened. Drive gear has a diameter of 8½ in. and a 1½ in. face. The one piece pressed steel banjo housing is formed of ⅜ in. stock, with provision made for carrying the springs below the housing. Axle shafts are of chrome nickel steel, splined into differential side gears and keyed to wheel hub, their diameter at the wheel ends is 1½ in. The pinion gear formed integral with the shaft is carried in the overhung manner on two taper roller bearings. Similar bearings are used on either side of the differential carrier, while the bearings at the wheel ends are of the taper type also. All roller bearings employed in both rear and front axles are of Shafer manufacture. The front axle is an "I" section forging with

(Continued on page 34)

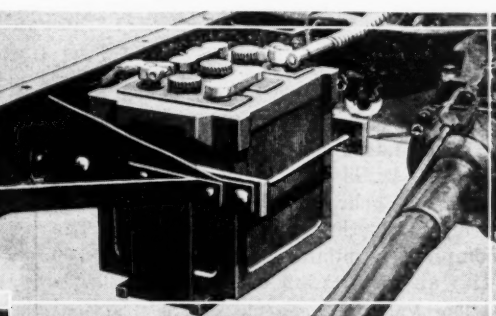
Mechanical Improvements on Chevrolet



With the removal of the spark and throttle controls from the instrument panel to the center of the steering wheel, changes have been made at the lower end of the steering gear. The photo shows the new layout of the controls as they emerge from the center tube of the gear



This view shows the new spark and throttle controls mounted in the center of the steering wheel



Improvements have been made in the battery case and the carrier. The former is now formed of solid rubber with the handles formed integral while the carrier now has a horizontal clamp bolt instead of vertical holddown bolts



Top center: On the new Chevrolet an additional engine support has been provided. It is a pressed steel member bolted between the transmission and clutch housings and it tends to reduce vibration through absorbing the torque reaction of the propeller shaft

HEREWITH are shown photographs of new features incorporated in the new 1927 Chevrolet, as described in last week's issue of MOTOR AGE.

The outstanding features of this model, known as the "Smoothest" Chevrolet, are an additional engine support, lighter connecting rods, quieter cams and tappets, a solid rubber battery case, location of spark and throttle controls on the steering wheel, a new design of stop-light switch and new body colors.

Details of these changes were given on page 43 of the August 12 issue of MOTOR AGE.

New 2-Ton Graham Brother Truck in Two Sizes

THE latest additions to the line of commercial vehicles built by Graham Brothers, the truck division of Dodge Brothers, Inc., are two new types of two-ton capacity. Like their smaller predecessors the new chassis will be supplied with a variety of bodies suited to practically every requirement. Two lengths only are made: the shorter, for 9 foot bodies, has a wheel base of 137

in. and the longer, which is for 12 ft. bodies, has a wheel base of 162 in. Both chassis are equipped only with pneumatic tires, with either single or dual rears optional. Where single tires are used 32x6 in. size are fitted in front and 34x7 in. at the rear. For dual rear tire equipment disc wheels are standard with 34x5 in. tires both front and rear.

Pressed steel frame side rails for the shorter chassis are 7 in. deep and for the larger 7½ in. Due to the lower bending moments in the short frame its thickness is ⅜ in. while that of longer frame is ¼ in. Front springs on both chassis are 37 in. long, 2 in. wide and have 9 leaves, while the rear springs are 56 in. long, 3 in. wide and have 11 leaves. Semi-floating rear axles are used incorporating spiral bevel gear final drive with a reduction of 6.286 to 1. Both service and hand brakes are of an internal self aligning type operating in heavy pressed steel drums at the rear hubs. The brakes are connected so that the pedal operates all four brakes while the hand lever operates two only. This feature, it is stated in-

sures long life and even wear of the brake facings.

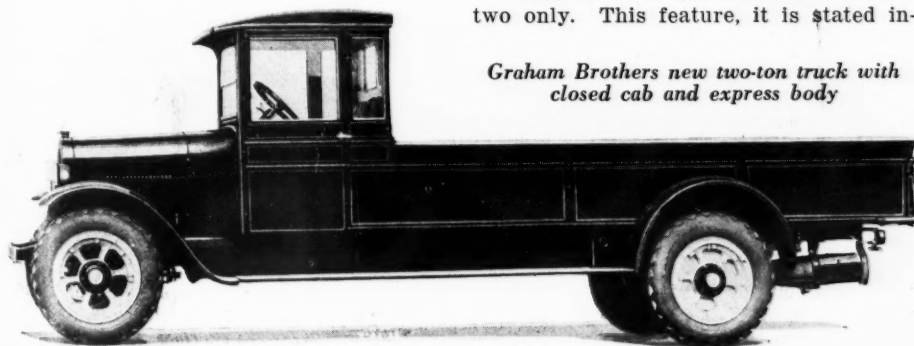
With either single or dual tire equipment the price of the shorter chassis is \$1445 while that of the longer chassis is \$1515.

Coincident with the announcement of the new trucks, Graham Brothers have adopted a policy of keeping chassis under test at Detroit off the public highways and to this end have built a concrete test track surrounding a new building erected for the final inspection and final test department. The total length of the track is somewhat over ¼ mi. and due to banked turns, trucks can be tested at speeds comparable to those of commercial operation.

Say "Ford Town" Is Planned

MONTREAL, Can., Aug. 2.—Henry Ford, according to reports, will build a town similar to Ford City in or near Montreal in the near future. Preliminary inquiries into facilities afforded and privileges to be gained have been made, according to information from unofficial but authoritative sources. Representatives of the Ford company are searching for a suitable location, it is said.

The object of the new manufacturing community is said to be for the purpose of taking advantage of the port of Montreal in meeting foreign trade demands. The plant, it is said, will also be used to supply customers in Eastern Canada, while the community will be complete with houses, churches, and schools for the Ford employe.



Graham Brothers new two-ton truck with closed cab and express body

August 19, 1926

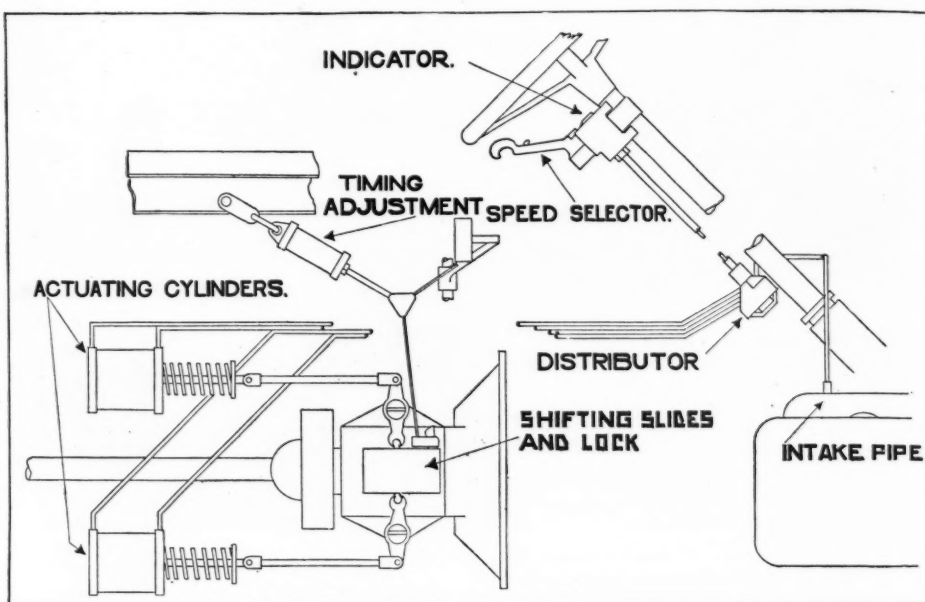
New Device Uses Vacuum to Shift Gears

THE Vacuum Gear Shift Corporation, of Larchmont, Westchester County, N. Y., is now marketing the Craig automatic gear shift which does away entirely with the gear shift lever. The complete appliance retails for \$75.00 with an installation charge of \$7.50.

The Vacuum gear shift is a practical application of the principle of actuating the transmission gears on an automobile by means of the power derived from the partial vacuum produced in the intake manifold of an internal combustion engine. In the vacuum gear shift this is effected by taking a lead from the intake pipe of the engine to a manually operated valve, called the distributor, which in turn, is connected with two cylinders which are of sufficient dimension to produce the necessary force to operate the gear shifting mechanism.

In each cylinder is an air-tight piston which is normally held in a central position by means of a coil spring externally mounted and which operates in either direction. When the vacuum is applied to either end of the cylinder the opposite end is automatically opened to the air by the distributor. Upon the release of the vacuum, the piston returns to its original mid-position, due to the force of the return spring which is sufficient in strength to move the gears under all operating conditions.

The actuating head, which is supplied



Craig automatic gear shifting device

to replace the transmission cover, consists of two sliding forks supported by plates and actuated by linkage from piston rods. The slide plates are so designed with a locking device that they are at all times securely locked in the desired position. Only one slide can be released at one time. The moving slide is drawn positively, so that the gears are at all times correctly aligned and when in

locked position it is impossible for either slide to move—the gear is therefore securely locked in the selected location.

This whole operation is controlled by a small speed-selecting handle mounted underneath the steering wheel. The clutch pedal actuates a mechanism so that the actual shifting of the gear is accomplished the instant that the clutch is thrown out.

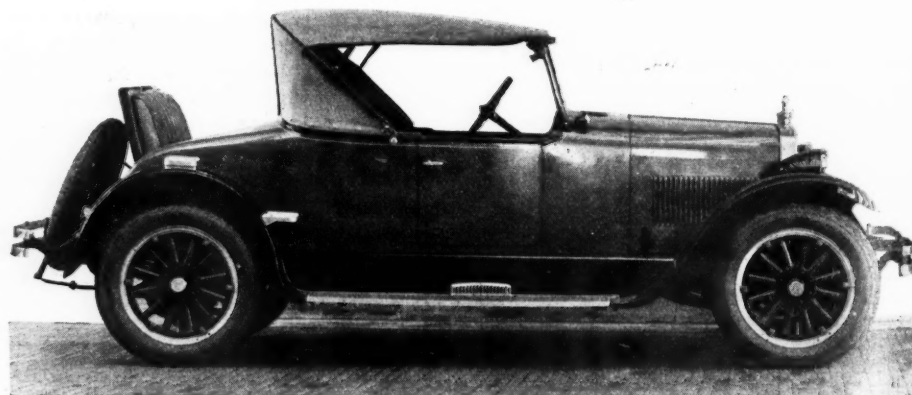
New Dodge Brothers Roadster Has Rumble Seat

THE addition of a sport roadster with folding rumble seat and listing at \$945 to the Dodge Brothers line, as told in last week's issue of Motor Age, marks the third roadster model to be in regular production by the Dodge Company. Improvements for better streamline have been made in the body of the new model with the introduction of the rumble seat, although the characteristic lines of the other two roadsters are retained.

*Access to the rear seat is by two aluminum sep plates on the forward side of the rear fender. Gray Spanish leather upholstery is used in the rear seat to match the interior of the front compartment. The general color scheme is similar to that on the special roadster model, the effect being a pheasant green lacquer body with a tan colored folding top.

Nickel trim is used extensively in the new model, the windshield stanchions, lamp rims, radiator, top bow fittings, and

bumpers being so treated. The equipment on this model is practically the same as that on the special series.



New Dodge Brothers Roadster with rumble seat, listing at \$945

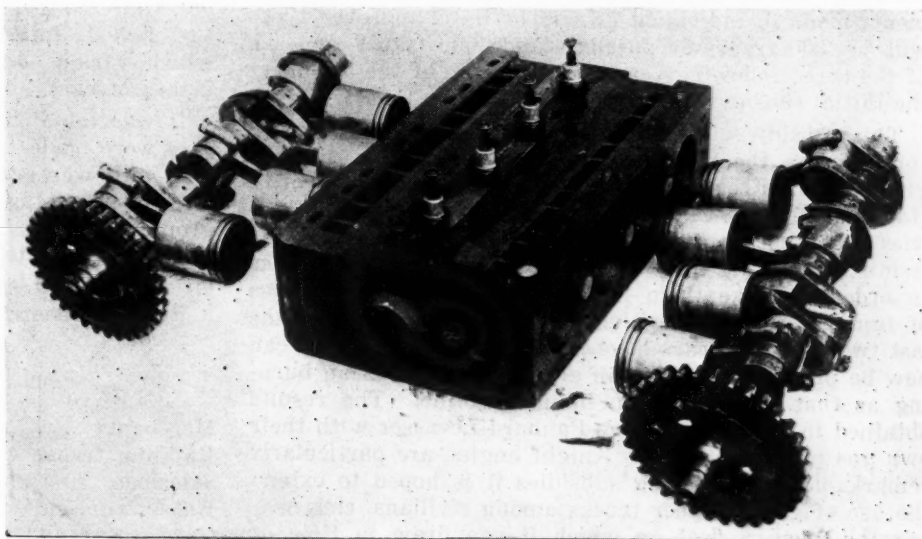
Causan Two-Cycle Engine

Experimental Four-Cylinder Model Thought Similar in General Features to Race Types That Are Being Tried Out by Fiat

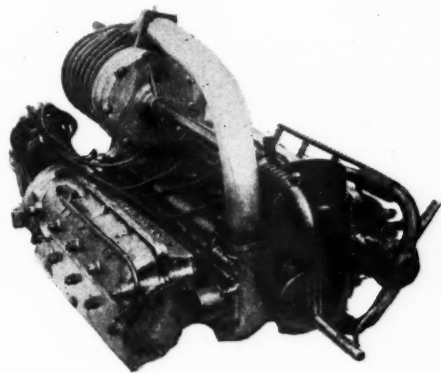
By W. F. BRADLEY

PROMINENT among the two-cycle engines now being produced as experimental models by various European engineers is the Echegoin-Causan 91½ cubic inch model which took part in the recent motor boat race for the Duke of York's Cup, in England.

The Causan engine is of the two crankshaft double piston deflectorless type, and is believed to be similar, so far as its general features are concerned, to the racing models being experimented with by the Fiat Company. Weighing 200 pounds complete, it has four cylinders in a single iron casting weighing 50 pounds, mounted horizontally, with an aluminium crankcase bolted to each end.



New Causan two-cycle four cylinder engine with crankcase removed to show the two crankshafts



Causan four-cylinder, two-cycle, supercharged, double piston and two crankshaft engine. It has a piston displacement of 91½ cubic inches

Each cylinder receives a pair of opposed pistons, which are connected up respectively to a left and a right hand crankshaft, having throws at 90 degrees, considered spirally, and carried in three plain bearings. Each of the crankshafts carries a spur pinion and the two are united by an intermediate pinion, which for boat service gave a two-third reduction.

The pistons on one of the crankshafts uncover the intake ports while those on the opposite shaft uncover the six exhaust ports around each cylinder barrel. To allow of the complete evacuation of the spent gases the exhaust crankshaft has a lead of 12 degrees over the inlet shaft. A Rootes compressor, driven at engine speed off the intermediate pinion uniting the two crankshafts, delivers the mixture under pressure to the cylinders and the charge is fired by plugs mounted

vertically and supplied with current from a magneto driven off the extremity of one of the crankshafts.

While the crankcase on the exhaust side is open to atmospheric pressure, that on the intake side of the engine is under the same pressure as the intake manifold and has lubricating features which are the subject of patents. The water pump is driven off the rear end of one of the crankshafts and cranking is through the blower.

Before it was put into the racing boat, the Causan engine underwent bench tests, when it developed 123 h.p. at 3775 revolutions and 136.5 h.p. at 4400 revolutions. It is claimed that 150 h.p. can be obtained. By reason of the unsuitable

propeller size and the lines of the boat, it was very difficult to hold the craft and eventually it capsized. Good results were obtained from the engine, however.

Plans have been laid for the production of an eight cylinder box-type sixteen piston aviation engine on the same general principle as the four cylinder model. The four crankshafts, with two throws at 180 degrees, are connected up to a central pinion on the propeller shaft. The bore and stroke are 4.1 and 4.3 ins. respectively, giving a piston displacement of 924 cubic inches and it is claimed that 700 h.p. will be developed at 2400 revolutions, with a weight of 1.1 pounds per horsepower.

Two Carburetors on a Six

Readers of *MOTOR AGE* are often interested in methods of getting increased speed and power out of stock cars. The problem of getting more power resolves itself into the problem of burning the fuel faster, that is, getting a heavier charge in the cylinder each time or getting high speed operation or both. A method of getting a heavier charge in the cylinder is shown in the illustration of the Hudson engine on which two Zenith carburetors have been installed. We understand that this improves both the acceleration and the maximum power available. The illustration is taken from the *Zenith News*.

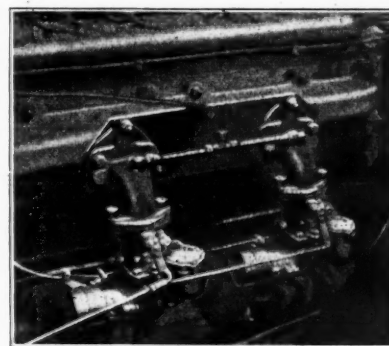


Illustration shows two Zenith Carburetors installed on Hudson engine

French Army Sees Practicality in Trucks Driven with Charcoal Gas

Believing that automobile trucks running on gas produced from wood, charcoal or coal are now a practical proposition, the French Army is prepared to include them in its truck subsidy scheme. Beginning on April 1, 1927, the War Department will hold a public competition for 3½ and 5 ton trucks using gas producers and will give the makers of the successful types the right to offer these to the public as subsidized models. The army payments made to individual owners of these approved types will be 4000 francs on purchase and 3000 francs for each of the three following years. In the case of the 5-tonners the initial subsidy will be increased to 5000 francs.

This subsidy scheme applied to gasoline trucks, was in force before the war, and was instrumental in 1914 in giving to the French army its first motor transport corps. Having sufficient vehicles on hand, the military authorities have not continued the subsidy scheme since the Armistice, but are now offering it for gas producer trucks in order to make them independent of outside supplies of liquid fuel. Competitions held in France during the last two or three years have proved that charcoal gas can now be produced which is in every respect as clean burning as that obtained from liquid gasoline. The results obtained in this direction by Panhard-Levassor with their own gas producer and the Knight engine are particularly remarkable. By offering subsidies it is hoped to extend the use of gas producer trucks among civilians, thus giving the army a fleet on which it can draw in time of national danger. The French military regulations impose only minor technical restrictions and standards, dealing with the interchangeability of such parts as wheels, tires, magnetos, etc.

Central Oiling System Now Used By Nine Makers

Nine different builders of automobiles have adopted systems of central-source chassis lubrication in the last two years and between 60,000 and 70,000 cars using one of these systems have been produced in that period, asserted Fred H. Gleason, of the Bowen Products Co., at a recent meeting of the Milwaukee section of the Society of Automotive Engineers.

The incorporation of a central lubricating system in the chassis relieves the operator of the disagreeable and often neglected job of oiling the many dirt-covered parts of the chassis. Without leaving his seat he is able at any time to lubricate every bearing merely by giving an oil-pump plunger several strokes with his foot. Such a system, by eliminating the dirty work and providing efficient lubrication of the various chassis bearings, said Mr. Gleason, results in longer chassis life, improved riding and handling qualities, and the elimination of annoying squeaks and rattles.

Satisfactory results have been obtained with systematic operation and no trouble has been experienced from breakage of the tubing or the flexible connections. The best lubrication is attained by the use of the heavier engine oils, which have great viscosity, stay in place in the bearings and prevent the entrance of either water or dirt.

Briefly, the central lubricating system is comprised of an oil reservoir carried on the dash under the hood, an oil pump that draws oil from the reservoir, a pump plunger operated by pressure of the driver's foot, or in some cases by hand, and tubing, flexible hose connections and channels in steering knuckles, wheel spindles and

brake parts to carry the oil under pressure to all points on the chassis that require lubricating.

A push of thirty pounds on the plunger produces pressures on the oil ranging from 300 to 1000 pounds per square inch in the primary oil tubes. The quantity of oil delivered to each bearing is measured by a control device at each point.

Types of Car Buyers

An analysis of sales of Paige and Jewett cars throughout the country, made by the Paige-Detroit Motor Car Co., reveals interesting information as to the extent to which various occupational groups are buyers of these makes of cars.

It was found that 13.2 per cent of total sales of these cars were made to the group including foremen, machinists, mill workers, miners and laborers. This was the largest percentage of sales made to any group. This group, however, is said to comprise 23.8 per cent of the business population of the country and relatively does not buy cars as largely as some other groups.

Figures given for some other groups are:

	Per cent of sales	Per cent of business population
Merchants	10.7	3.9
Building trades	7.4	8.2
Salesmen	7.1	3.4
Executives and manufacturers.....	6.9	1.5
Government and municipal.....	3.6	2.2
Teachers and clergy.....	1.8	0.8
Newspapermen, engravers, printers	1.7	0.3
Real estate and insurance.....	1.6	0.8
Bankers and brokers.....	1.6	0.4
Lawyers	1.1	0.3
Transportation, railway, express, telegraph	1.1	5.8
Architects	2.2	0.2

Photographs Make Good Used Car Ad Copy

The plan of printing photographs, description and price quotations of each used car advertised was tried by the Pryor Motor Co. of Birmingham, Ala., as the next thing to having a personal showing, proved to be an excellent method. One of the most difficult things to handle in the sales of used cars, according to Andy Pryor, president of the Pryor Motor Company, is that of advertising that will cause the prospective buyer to come into the store and ask for a certain car or type of car.

This method of advertising not only gave the customer a clear idea of just what the dealer had at the time but is saved time all around. Only those customers who were interested in a certain car came to look. They saw the one they were interested in and either bought or went away. Of course it is good business to have people come into the shop even when they are not thinking of buying, but the point is in this advertisement that it brought in the real prospects and sold the cars.

Most of them came in and made an inquiry on the order of this:

"I want to see that Hudson Super-Six sedan priced at \$795 if you still have it," or "How about that Ford Touring car at \$165?"

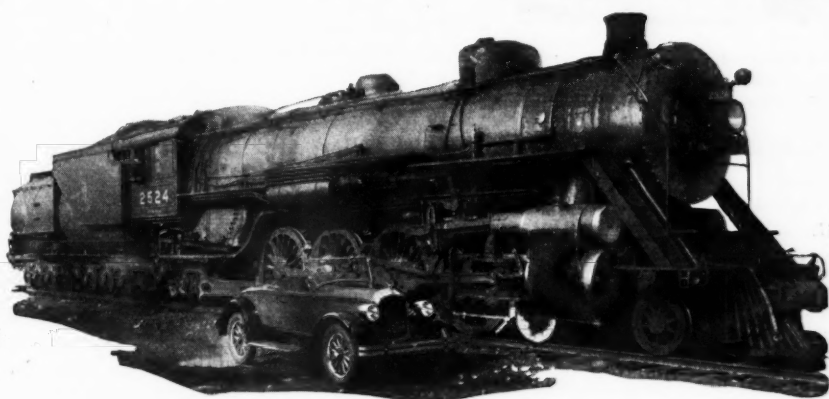
These queries gave the dealer an idea of just the sort of used car the customer was interested in and they got right down to business without any false starts.

Sales Stunts and Novelties in Picture

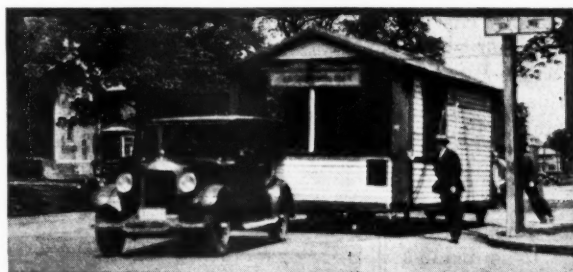
OUTDOOR SHOWING of the new Oakland-Six line was made necessary because of rebuilding operations which were underway in the showroom of the Fellwock Auto Company, Evansville, Ind. Now Fellwock men believe this is an ideal way to present new models.



A CONTRAST between a Modern Great Northern oil burner used in transcontinental travel and an automobile. Contrast is mainly in size for the little one will run as fast as the big one and collectively many more passenger miles are carried by the motor cars.



BROMO SELTZER BOTTLE makes trip from New York to San Francisco. This is an Advertising body built on a White truck. It made the 4,000 mile trip without costing one cent for repairs or adjustments.



WHEN YOU MOVE just hitch your house behind your car and go. This building was moved across the City of Lynn, Mass., by a Studebaker Standard Six.



NEW ORLEANS WAS TREATED TO SOMETHING DIFFERENT recently when a brass band mounted on a truck serenaded Canal Street in the interest of a used car sale instituted by Gus D. Revol, Cadillac dealer. The truck bearing the band was followed by a 1904 model Cadillac, which attracted considerable attention as it chugged its way down the main thoroughfare. It was followed by one of the late model Cadillacs, which in turn was followed by trucks with signs announcing the sale.

NEW DEVICES IN ACCESSORIES

Delta-Bojac Stop Light

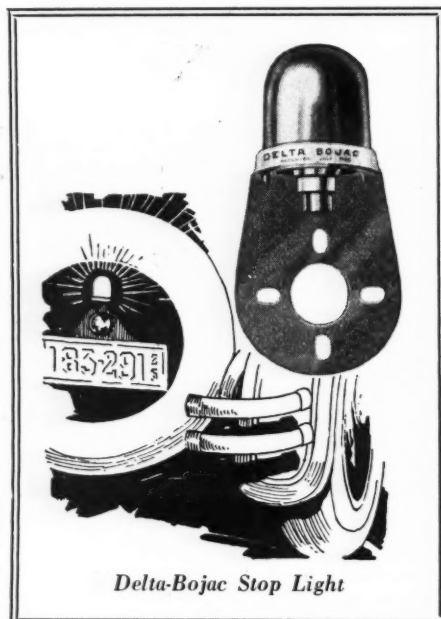
A NEW stop light being introduced to the trade by the Delta Electric Company, of Marion, Ind., incorporates the automatic flasher principle used in signal lights such as those at railroad crossings. By means of a flashing mechanism the stop light sends out penetrating flashes—50 to 100 per minute—instead of giving out only the usual stop light glow. It is claimed that this flashing light increases the effectiveness of the stop signal.

A simple vacuum mechanism which takes but a fraction of the air used for an automatic windshield wiper produces the flashes. This, together with the stop light itself, pedal switch and all minor parts necessary for installation, completes the outfit. However, for those who wish only to convert their present conventional stop light into a flashing stop light, the flashing mechanism may be had alone.

The complete outfit is furnished either with red, green or amber dome glass lens. It lists at \$5.50 in the United States and \$8 in Canada. The list price of the flashing mechanism alone with installation material is \$3.50 in the United States and \$5 in Canada.

Masco Heater for Nash

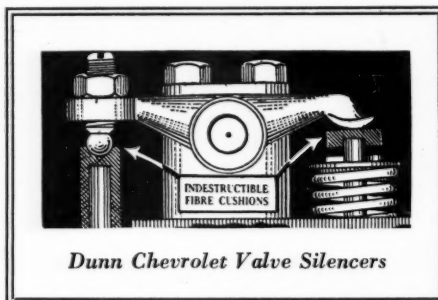
THE greatest possible heating efficiency is claimed by the manufacturers for the Masco Heaters for Nash cars. This heater is a product of the Mastercraft Corporation, Battleboro, Vt. Attractive in appearance the heater is built as an integral part of the engine and is said not to interfere with accessibility to other parts of the power plant. A high order of heating efficiency is said to have been obtained by designing a special exhaust manifold which has greatly increased radiating surfaces. The air is made to travel the length of



Delta-Bojac Stop Light

the manifold three times, thus providing the passengers with much more heat than when the air makes but one such passage:

Control of the heater is easily managed, a button operating a shut-off valve being located on the instrument board. These heaters are distributed through Nash dealers.



Dunn Chevrolet Valve Silencers

"A-Just-It" Coach Seat

THE A-Just-It Company, 5950 Second Blvd., Detroit, is manufacturing what it calls the "A-Just-It" Coach Seat Adjuster which provides eight inches of regulation on the coach seat, four forward and four back. The adjuster will lock in 16 different driving positions and is easily regulated from the driver's seat. The device is recommended by the makers especially for the family or company where several persons of different statures drive the car and in such cases as alternate driving by husband and wife. The increasing number of women drivers is said to enhance the adjuster's merchandising value. Also counted in its potential market are the tall and short men.

The "A-Just-It" can be quickly installed without special tools and it requires no seat alterations. It is made of steel with baked enamel finish. Price \$7.50.

Stop-A-Shok Absorbers for Fords

IT is not necessary to drill any holes in the Ford chassis when attaching the set of four Stop-A-Shok shock absorbers manufactured by the Stop-A-Shok Co., 331 Madison Ave., New York. The drum housing of the shock absorber is bolted around the front axles and rear axle housings and the webbing of the front absorbers is attached at one end to the base of the head light post and at the other to the bolt supporting the front mud guard. A coil spring is used in making this last connection which keeps the webbing taut. The webbing of the rear Stop-A-Shok is attached at one end to a body bolt and at the other to the channel bar supporting the running board. A spring is also used in the latter connection. The device is described as a positive rebound check and shock absorber and the complete set with the necessary brackets lists at \$10.

Dunn Chevrolet Valve Silencers

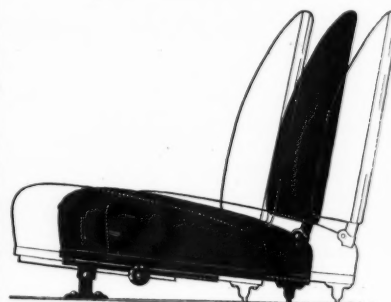
DUNN Valve Silencers for Chevrolet are a product of the Dunn Manufacturing Company, Clarinda, Iowa. Through their cushioning effect it is said that the silencers stop rocker arm clicking and remove the temptation to adjust valves too tightly in an effort to reduce noise of valve operation. The Dunn silencers act as insulators at 16 points of metallic contact in the Chevrolet engine's rocker arms. One set of Dunn Silencers consists of eight recessed fiber discs, which set over the upper end of the valve stems, and eight fiber sockets which replace the metal sockets at the upper end of the push rods. Installation may be made in a few minutes. Packed one set to a carton containing full instructions; the set is priced at \$2.50.

Valley ABC Battery Charger

BATTERIES of 2, 6, or 12 volts and radio B batteries of 24 to 96 volts can be charged by means of the ABC battery charger produced by the Valley Electric Co., 3157 S. Kings highway, St. Louis, Mo. The device is operated from the 110 volt housing lighting circuit and it is made in two models, one for use on 50 to 60 cycle current and the other for use on 25, 30 and 40 cycle. The case is finished in black enamel and the instrument panel is bakelite on which is mounted an ammeter and the necessary binding posts and switches. The rectifying element is mounted on a slate base and is covered by a glass cover. Price 60 cycle, \$19.50; 25, 30 or 40 cycles, \$21.50.



Masco Heater for Nash



A-Just-It Coach Seat

The READERS' CLEARING HOUSE

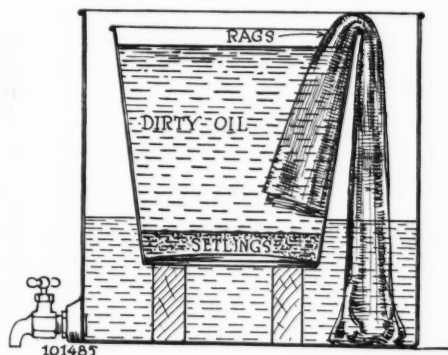
Questions And
Answers



On Dealers
Problems

Capillary Action Works This Filter

Noting your request for information in regard to making an oil filter, I am enclosing sketches showing system I have used for the past four years. One of the illustrations shows an ordinary bucket setting on a wooden block in a larger bucket or sheet metal receptacle. In this outer receptacle there should be a faucet soldered so that oil can be drained off. Over the edge of the inner bucket it is necessary to hang rags made from old blankets, bed spreads, stockings or other soft material. Some of the rags should



Oil climbs out of the pail and leaves the dirt behind

touch the bottom of the outer receptacle, but none should touch the bottom of the inner pail. This arrangement allows the inner pail to be removed and cleaned after several months or a year. When dirty oil is put in the center bucket the oil is taken by capillary attraction.

Another illustration shows a way of allowing oil to settle so that the rags in the filter do not so rapidly become full of dirt. The five gallon can is used with holes punched along one edge, starting 4 or 5 in. from the bottom. This can is then set on the edge of a block of wood or on a table and a wedge used at one corner so as to tip the can over the edge as shown. In using this settling tank about 2 in. of water is put in the bottom and then the old oil is poured on top and this is allowed to stand for one week without being moved. At the end of this time the upper two or three plugs may be taken out, which will allow fairly clear oil to run down the corner of the can. This can be caught in any convenient receptacle and poured into the filter.

This system works very well and supplies enough oil for one or two cars. If

greater production is necessary, barrels can be used for the settling chambers and a long rectangular trough should be constructed with an inner rectangular trough used instead of the bucket. One essential is to have the filter in a warm place, for the warmer the oil the faster it travels through the filtering cloths. It is well to keep the filter and settling tanks covered to keep dirt out while filtering process is going on. This method of filtering does not include elimination of gasoline which has worked into the oil except that some of it may evaporate as the oil travels over the edge of the bucket during the filtering process. If the oil should be kept at a comparatively high temperature by artificial means, this would no doubt eliminate practically all of the gasoline content.—R. M. Jewett, 2013 McGee Ave., Berkeley, Calif.

CLOSE ADJUSTMENT ROUGHENS CAMS

Q.—Will you please send full instructions for timing engine and installing timing chains on 1926 Moon and Diana cars?—John F. Nash, 3548 Georgia St., San Diego, Calif.

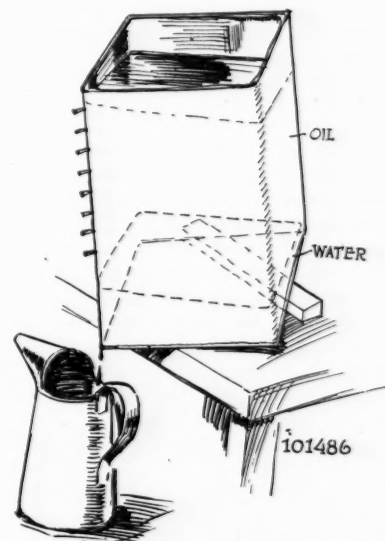
On the Moon car the inlet opens 4 deg. past top center and closes 46 deg. past bottom center. The exhaust opens 41 deg. before bottom center and closes 1 deg. past top center. To install a timing chain set the flywheel so that the mark "No. 1 E. C." is just in line with the pointer. This sets the engine in the proper position. Now turn the camshaft in the normal running direction until the exhaust valve in the No. 1 cylinder just closes with the valve tappet clearance set at .0075 in. cold. This valve tappet setting is for timing purposes only. Now with crankshaft and camshaft in the proper position install the chain over crankshaft and camshaft sprocket so that the right hand side of the triangle is perfectly straight. Then loop the chain over the generator sprocket.

At the right side of the triangle there should now be 10 teeth between the two spaces marked "O." This includes the first two teeth that are fully engaged in the marked spaces of both sprockets. The timing on the Diana is the same except that there will be 14 teeth instead of 10 teeth between the "O" marks on the two sprockets. After installation is complete the tappet adjusting screws should be set so that there is a clearance of not less than .006 in. for the exhaust tappets and not less than .004 in. for the inlet tappets when engine is hot. A closer adjustment causes roughening of the cam surfaces and the tappet surfaces.

Loose Valve Action After Ten Years

Q.—We have a 1916 Cadillac and the connecting rods are right and the piston pins are tight. This car has a knock in the valve lifter or camshaft. Can you give a remedy?—J. R. Jones, Gordonville Garage, Gordonville, Texas.

There are a number of possibilities of trouble in the valve operating mechanism. You may have excessive wear in the camshaft bearings. You may have looseness in the cam followers, which transmit the cam motion to the push rods. You may have wear in the push rods or in the guides. The real remedy is to overhaul the engine and replace all worn parts. To test the valve mech-



Draining off best portion of oil reduces work the filter must do

anism where the valves are in the center of the vee is somewhat difficult when engine is running.

If you find it possible to make a test here with engine running you can exert side pressure on the different valve tappets one at a time to see if this affects the noise. Another thing you can try is to adjust one valve tappet at a time so that there is no clearance between it and the valve stem. This exerts a pressure on the valve operating mechanism and on the camshaft at all times due to the pressure of the valve spring. In this way it is sometimes found that a noise will be located, being either increased in volume or eliminated by an experiment of this character. After trying this on one valve the normal clearance should again be used and another valve tappet tightened up.

Planning Your New Building

By Tom Wilder

Canadian Distributor Wants Help in the Arrangement of His New Building

Q.—We are contemplating building a new garage and we would ask you to furnish us with plans of a garage which you think would be suitable for our purpose. We are handling Hupmobile and Star cars. We have a corner lot 100 by 125 ft.

We do not want to erect a building of more than one story, with the exception of probably making the front end a story and a half high which would take care of our office, etc. We would like to have showroom approximately 30 by 50 ft. with sales offices on the ground floor.—Premier Motors, Ltd., Calgary, Alberta, Canada.

We have divided this space into two sections 50 ft. wide each so that one may be used for garage purposes both for the storage of new cars and for overnight and ordinary storage of all kinds. The other side is given over to sales and service.

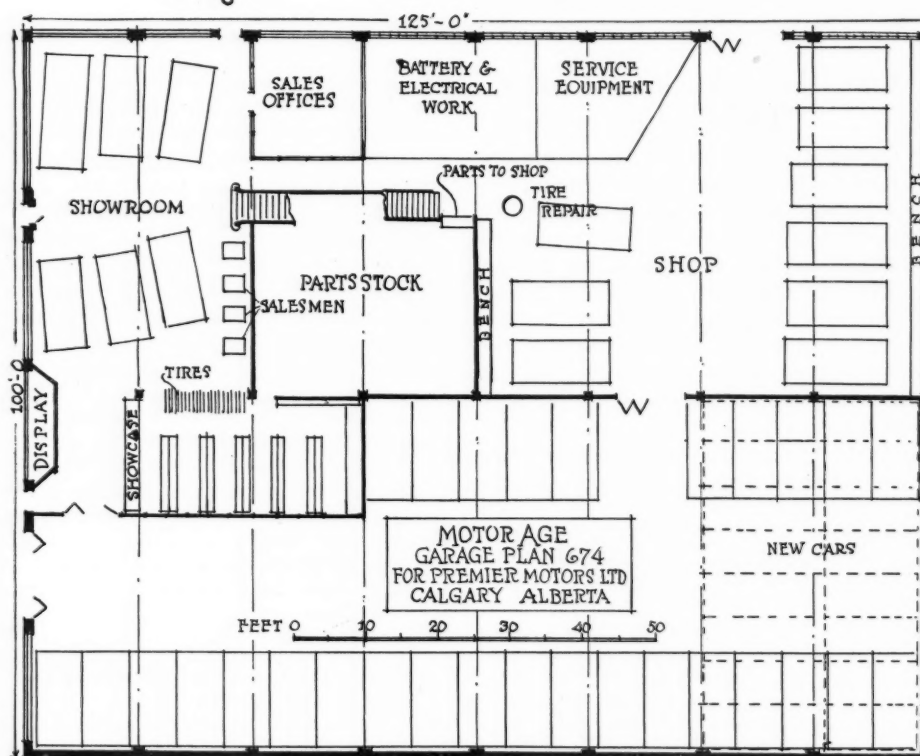
The 30 by 50 ft. showroom you asked for is in front, with a balcony immediately back of it, large enough to fill the space between two trusses or if you need more room it can be extended further back over the whole of the parts stockroom. Below the balcony on the main floor is the sales office and along the back of the showroom is space for salesmen's desks. Stairways lead to the balcony both from the showroom and from the service station.

Adjoining the showroom is an accessory store which is very well arranged and which we have intended to be for the purpose of handling retail parts as well as accessories. Cars are taken into the showroom across the front of this accessory store rather than waste space for a wide passage from the service department.

The main repair shop is at the rear of the building, cars being placed facing a bench extending along the rear wall. At the front side of the room is space for three cars and it is proposed that you use this space for tire repair, quick service and tuning new cars. The space along the windows on the side street is reserved for service equipment and for special jobs such as battery, radiator work, etc.

If a quantity of new cars is to be stored they may be placed at the rear of the garage spaced fore-and-aft and packed in solid as indicated by the dotted lines. In this way almost double the number of cars may be stored in this space as in the ordinary method.

Plenty of skylights should be arranged as the size of this building will prevent its getting much light to the interior from side windows.



A building the size of this when well arranged will handle a large volume of business both in local sales and service and the necessary details in connection with the distribution of cars and parts

READERS' CLEARING HOUSE

LEGAL QUESTIONS ANSWERED

By Wellington Gustin

BRING SUIT IN JUSTICE COURT

Q.—I wish advice on what to do in this case, where a former good customer has taken out his car after paying for all parts but refuses to pay the remainder or labor charges without a suit. After repairing the car as he requested, it was not satisfactory. This I told him before the repairs were made and in the presence of four witnesses. He said he intended to trade it in on a new one and just so it ran fairly good was all he wished. After paying for the parts at the time, he has never come back to pay for labor charges and I cannot collect without suit. The remaining bill amounts to \$60. Can I collect by suit for my labor and how should I go about it? The bill is some six months old.—Tucker Auto Repair, St. Louis, Mo.

You will have to bring suit for labor. A labor judgment has some advantages over other judgments in the way of not being included in exemptions, etc. In St. Louis you can bring your suit in a justice's court at small cost. You have your witnesses—a most important thing in winning a case in court. You did not preserve your lien rights.

LIABILITY IN CASE OF FIRE

Q.—Is an automobile dealer in the state of New York responsible for a customer's car in his place of business in case of fire or theft if the building is well posted?

A.—The rule of law is general, in New York state and others, that the garage-keeper or dealer is not responsible for a customer's car in his place of business in case of fire or theft, unless the loss by fire or theft could have been avoided by the exercise of ordinary diligence by the keeper. The garageman is not an insurer against loss by theft or by fire. But he has a duty to keep safely the property in his possession. How safe is measured by the degree of care ordinarily used by a reasonably prudent man. If he does not use this reasonable care to keep safely, then the loss is attributable to his negligence and he is liable for the loss. And if he is negligent in doing or failing to do what he should have done to prevent the loss by fire or theft, the posting of signs is useless, for it is a general rule of law that one cannot limit by contract his responsibility for loss due to his own negligence.

Answers to Readers' Questions

Chevrolet Timing and Ford Compression

Q.—As I am a much interested reader of *MOTOR AGE* I would like to ask you some questions, which are as follows: What is the correct valve tappet clearance on a 1925 Chevrolet?—Sherman H. Purnell, Blandinsville, Ill.

Intake valve should be set with a clearance of .008 of an inch and the exhaust valve with a clearance of .010 of an inch when the engine is thoroughly hot.

Q.—What is the correct valve timing by piston travel on a 1925 Chevrolet?

Intake valve begins to open when the piston has traveled $\frac{1}{8}$ of an inch down on the intake stroke and the exhaust valve begins to open when the piston is within $\frac{1}{8}$ of an inch of bottom dead center on the power stroke.

Q.—Give names of some good books written only on Ford cars and Fordson tractors and where I can get them.

This information will be supplied by separate letter.

Q.—I am thinking of putting the starting switch of my 1926 Ford roadster on the front foot board. Would this make the cable that runs between the battery and the starting switch too long so that I would have to change the position of the battery?

The only difficulty here would be a mechanical one, as it is electrically possible to considerably increase the length of the starting cables without affecting their resistance to the point that it would be noticed in the ability of the starter to turn over the engine. The position that you have selected for the starting switch is a perfectly practical one provided that the terminals of the switch do not come in contact with the transmission cover. As we recall it there is very little space here and we would suggest that you be very careful in making this installation as a short here would be quite likely to ruin the battery.

Q.—What should be the compression of the new Ford engine, 1926?

The compression of a brand new Ford engine will be considerably lower than the compression after the engine has become thoroughly run in. This is more or less true of most engines. In general the compression of the new motors will range between 40 and 50 lbs. and it is of course highly desirable that the compression be the same in all cylinders.

KNOCKS AT SPEEDS ABOVE 30 M.P.H.

Q.—We have a Flint 45 which has a knock that we have not been able to locate. This knock does not show up until you exceed 30 miles per hour. Then it knocks regardless of the acceleration. We honed this engine out and put in oversize piston rings and wrist pins, and also

new timing chain, but the same knock is still there.—R. O. Martin, 788 N. Main St., Marion, Ohio.

Of course there are many possibilities as to what this knock may be and it would have been helpful had you mentioned the kind of sound that is produced. That is, whether the knock you refer to was a light tapping sound, a rattling noise or a heavy thumping. We would suggest that the cylinder bores be checked with a dial indicator as it sometimes happens in the honing process that the walls are not perfectly cylindrical and in a case of this kind where the diameter varies slightly the expansion and contraction of the rings will produce a knock. It may also be that the connecting rods are not perfectly aligned in which case there would be a light knock at idling speed and a more pronounced knock when picking up. If you have the May 22nd, 1924, issue of *MOTOR AGE* we would suggest that you refer to the article on Page 17 covering Abnormal Engine Noises and how to find them. This is most complete and covers a number of very unusual conditions which should prove helpful to you on your problem.

SHOP KINKS IDEAS That have been Found Useful

A Precaution Worth Taking

When a radiator is drained and left in the shop for any length of time it is a good idea to hang a tag on the steering wheel of the car, the tag being marked "No water." If this is done there is not much chance that anyone will start up the car and drive it without remembering to fill the radiator.—R. G. Dasse, 35 N. Union St., Burlington, Vt.



Readers of *MOTOR AGE* are invited to submit ideas that they have found useful in doing some particular service job in the shop in a better or quicker way. For each one published \$2.00 will be paid. Whenever possible the idea should be accompanied by a sketch or diagram from which a drawing can be made.

Detonation in Only One Cylinder

Q.—A 1920 Chalmers after being completely overhauled developed a sharp knock in one cylinder, after being driven about 1500 miles. The knock came at about 10 to 15 miles per hour on high gear when climbing a hill. After cleaning carbon the knock was gone indicating that it was detonation of the gas charge, but why in one cylinder only? When the pistons were cleaned and turned to top center, No. 6 was a few thousandths of an inch below the top of the block. The other five pistons stood above the block varying from about 1-16 of an inch to about 1-32 of an inch. The carbon before cleaning averaged about 1-64 inch thick and possibly 1-32 inch. Now should I assume that one combustion chamber is slightly smaller than the other and the small amount of carbon and one of the higher pistons combined to cause this ping in one cylinder only or should I try to find some other cause?—R. M. Jewett, 2013 McGee Ave., Berkeley, Calif.

Detonation or ping in an engine is the direct result of the fuel being subjected to excessive heat, pressure or both. Carbon formation acts very much like an asbestos plate, preventing the cooling water from carrying off the heat of combustion as it should and if the pistons are traveling to different heights the one that goes the farthest up will be working under greatest pressure, other things of course being equal. You say that this car was completely overhauled and we take it of course that this included new pistons, and at least rebabbitting of the rods. We have seen cases where the rebabbitting job was not perfectly accurate with the result that the center to center distance between the wrist pin bearing and the crankshaft bearing varied and it also sometimes happens that the distance from the top of the piston to the center of the wrist pin may vary slightly in different pistons and if by chance you have a combination of these conditions in your engine the cylinder with the highest compression will of course be the first one to give signs of trouble. Piston slap gives a sound very similar to pinging and if you have one cylinder with excessive clearance, that would tend to develop trouble in advance of the others and would also pass an excess of oil which would form carbon a little faster than the other cylinders.

SERVICE DATA IN BACK ISSUES

Q.—Please tell me where I can find a list of the number of rings used, sizes of piston pins and the bore and stroke of 1926 passenger cars.—S. E. Archibald, 109 N. 9th St., Olean, N. Y.

The information you want is all contained in the January 7, 1926, issue of *MOTOR AGE*. This is also known as the National Show Issue and Specification Number.

Clearing Up Electrical Troubles

Devices for Testing Ignition Coils

Q.—I intend to rig up a coil testing outfit similar to the one shown on page 7 of the April 1st, 1926, issue of *MOTOR AGE*. I have a 110 volt transformer which cuts the voltage down to 8. Can I use the Ford coil in this outfit as a substitute for a high tension, non-vibrating coil, with alternating current for testing purposes. If so, please furnish diagram for testing ignition systems which have condenser in coil and those which have condenser in breaker box.—New Jersey Reader.

The diagram shown in the April 1st issue is not suitable for anything except the Ford coil, and for testing lamp bulbs and spark plugs. If you want a device for testing a non-vibrating coil as found on cars other than Ford you should rig up an interrupter and drive it with a small motor such as an electric horn motor. Such an interrupter should not have a condenser. You should have a spare condenser however, that you can connect across the interrupter points whenever you have a coil which has no condenser in it.

Q.—Can the condenser contained in the Ford coil be connected separately for testing purposes and where should the wires be attached to the coil?

The condenser is always across the points. Accordingly you can put a piece of wood or paper between the contacts and then attach a wire to meet the contacts or to the binding post or screw to which the contact is attached. If you wish, you can take the contacts entirely off the Ford coil and connect the wires to the places where the brass piece and the spring were formerly connected.

FORD POWER FOR MOVIES

Q.—I get a lot of good out of your paper and now I have a few questions I would like to have answered. We have a picture show here in town that wishes to use a direct current generator and driven by a Ford engine. The generator speed is 1250 R.P.M. Would you consider this too fast to couple up direct to the Ford engine? Would like this method best if practical. We intend to cool the plant with at least two barrels of water and pump. Could you recommend a governor that would handle this speed? I have seen a small plant of this kind that had a magneto governor in which the current built up a magnetic field that controlled the gas flow. If you have any information on this kind of a device please give details. We will only use 6 or 7 horse power, so the engine should have ample power.—Roscoe Baxter, Baxter Machine Shop, Grafton, Ill.

We believe direct connecting will be satisfactory and that the engine will operate very nicely at 1250 R.P.M. Believe that the barrel of water will give satisfaction whether you use a pump or not. If you use thermo-syphon cooling you may be operating the engine at a

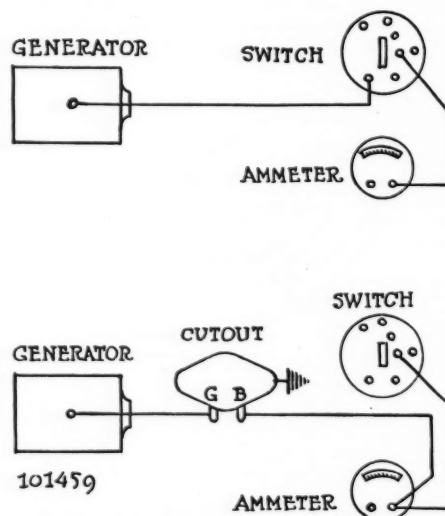
Edited By A. H. Packer

better temperature than if you force water through, regardless of the engine temperature. You probably realize that an engine temperature ranging from 180 to 200 deg. Fahrenheit gives better operation than if you run it cooler. The governor described sounds somewhat like the Remy generator governor used at one time on Moline tractors, but which has since been discontinued. We do not know of any other governor operating on this principle. We are giving you, however, by separate letter a list of concerns which make engine governors.

INSTALLING A CUTOUT ON AN ESSEX

Q.—Would like to know the proper way to install a generator cutout on a late model Essex six. I do not know where to put the wire on switch from cutout.—J. B. Replogle, Bryan, Ohio.

We are showing a sketch which gives two diagrams. The upper one shows that portion of the Essex wiring which has to do with the generator. The lower diagram shows the wiring changed so as to include a cutout. You will notice that the wire from generator to switch is cut in two and one end is connected to the G or generator terminal of the cutout and the other to the B or battery terminal of the cutout. Then the wire which normally goes from generator up to the switch is disconnected at the switch and connected over to one terminal of the ammeter. The correct terminal of the ammeter is the one that has another short wire running to the switch. Then you make sure that the base plate of the cutout is grounded and the engine is ready to run.



Above: Essex generator circuits. Below: Method of connecting cutout

When in Doubt Sell New Coil

Q.—I have considerable trouble in testing an ignition coil and knowing the exact condition of same. Of course, I can tell whether it is good or dead, but there must be some coils that are not good and still operate. I have an up to date test bench with a coil testing device, variable speed tester and variable spark gap. I have been trying to use a milliammeter, zero to 10 scale and measuring the value of the secondary spark. Can you give me detailed information on testing coils? How long should a coil run on test to know its condition?—Battery & Elec. Shop, Black River Falls, Wis.

The Clearing House editor had occasion at one time to check up on a Hudson car which occasionally missed in such a way as to be very annoying. The coil was taken off of the car and tested and appeared to be o. k. However, a comparative test was made with another coil which seemed to have a spark which would jump just a little farther and was just a little steadier. Then a more careful test was made on the old coil and it was run for perhaps an hour, at the end of which time the sparks missed with greater frequency. The new coil was then put on the car and it was found that the trouble was overcome.

ONLY SLIGHTLY WEAK

This seemed to show that if a coil was slightly weak it will cause trouble. Testing the spark is at best a difficult job, for the eye or ear must be depended upon in most cases. The test you suggest using a milliammeter will measure the quantity of current in the spark but will not in all cases tell you whether the spark misses occasionally or not. The best test is probably a comparative one where the old coil and the new coil are both tested perhaps at the same time. The best way of checking for missing is to use a tube of paper about 2½ in. in diameter with one end held near the spark gap and the other end near your ear. You can hear a spark missing much more easily than you can detect a miss with the eye. Tests should usually be run long enough to get the coil as warm as it will get. When the temperature stops rising then there is not much use testing it any farther. Of course, under the hood the engine heat will make it still hotter.

From a commercial angle it might be advisable in cases of this sort to sell a new coil on the basis that if the operation of the engine is not improved in a day or two the owner of the car may return the coil to you. In most cases he will find that the operation is improved and you will benefit by the sale of the ignition coil.

Answers to Readers' Questions

Steering Adjustment on 1926 Nash

Q.—Please explain how the adjustment is taken care of on the steering gear of a 1926 Nash Advanced Six model.—Andrew Kuzmaff, 186 Oak St., Wyandotte, Mich.

We are publishing an illustration which shows the two adjustments. The large nut on the steering columns adjusts the bearing which carries the worm. Before this nut is turned however, it is necessary to loosen the clamp screw just below it. Then the nut should be turned until the bearings are tight and then backed off just a slight amount so that the bearings do not bind. The clamp screw can then be tightened again. This takes the up and down play out of the worm. The cap screw marked "gear adjustment" should next be loosened and the plate that it holds should be turned so as to rotate the eccentric bushing and move the worm gear more tightly into mesh with the worm. When this second adjustment is made the front wheels should be in the straight ahead position and the steering gear arm should be at the intermediate point of its possible range of movement. After adjustment is made the lock screw should be tightened again.

CASHING IN ON SPECIAL FUEL

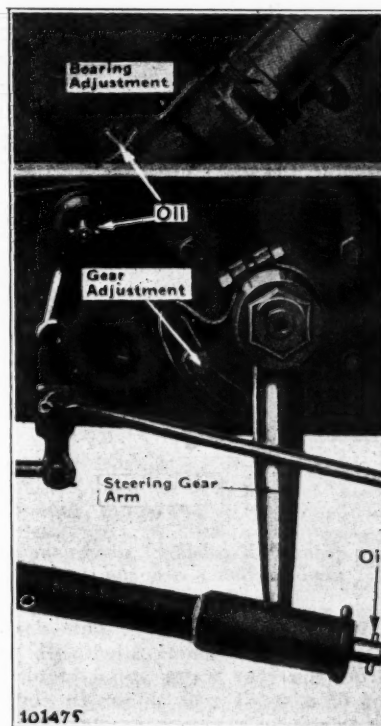
Q.—We have in our shop a 1921 Studebaker special six roadster that has run more than 50,000 miles, but is in exceptionally good condition. We are contemplating overhauling the engine and installing new piston pins and other parts and would like to know the advisability of increasing the compression ratio by planing about 1/16 inch off of cylinder block and about the same amount off the bottom of cylinder head. We thought that with the present grade of anti-knock gasoline we could do this and thereby increase somewhat the efficiency.—Iola's Ideal Garage, Iola, Kansas.

Increasing the compression is the correct way to take advantage of gasoline having anti-knock characteristics. In doing this you will also find that more spark advance can be used without knocking. We would recommend some caution, however, and would suggest your examining the construction of the piston and valves to see whether there will be any interference due to cutting down the size of the combustion chamber. Also see how far the top piston ring comes up in the cylinder bore. We would recommend a reduction of 1/8 in. first and would then suggest trying out the car to see how it operates. If there is no tendency for the engine to buckle or knock we would then take off an additional 1/8 in. and follow that up with the second removal of 1/8 in. Should you find you have taken off a little too much material you could compensate for it by putting in an extra gasket.

INSTALLING BUICK PISTONS

Q.—We have been working on Buick cars in which the customers complain of knocks. In these cars we found pistons put in different ways, some with the thick side of the piston to the right and some with the thick side to the left. We would like to know which is the correct way to assemble a piston and the reason. We would also like to know whether the crankshaft is in the center of the engine or whether it is offset with respect to the center line of the cylinders.—S. S. Robyn, Jr., Home Garage, Ogilvie, Minn.

The crankshaft is not offset but is in line with the center of the cylinder bore. The piston pin is offset and in all models



Places where adjustments are made

the thick side of the piston should be to the left when viewed from the rear of the engine as would be the case with the mechanic sitting in the driver's seat and looking toward the radiator. Another way to tell is to check up on the arrow which is cast into the piston. This should point toward the camshaft which is on the right side of the engine. The cotter pin should be toward the front of the engine. The clamp bolts on the connecting rod should be at the side of the piston pin and away from the camshaft.

The offset piston pin is intended to affect the thrust of the connecting rod so that the piston is held practically all the time against one cylinder wall, thus reducing the tendency for piston slap to develop.

Differential Needed in Cycle Car

Q.—I am building a small car with a four cylinder engine and 26 by 4 wheels. Car will be about 36 in. wide and 72 in. wheelbase. It will be chain driven. I want to know if I can eliminate the differential. If the differential is necessary, how could one be made to work with a single chain drive. The car is about finished all but the rear end. I am using a rear hub with two sprockets for a jack shaft.—A. R. Ernstdorf, Logan Machine Shop, Logan, Iowa.

We do not know of any car used for ordinary purposes which can operate successfully without a differential. Even on cycle cars such as yours this has been tried and found unsatisfactory. In some cases the drive has been on one rear wheel only, and then the one tire would rapidly wear out. The best thing to do is to use a Ford or Chevrolet differential in the jack shaft and have two chains going to the two rear wheels. This of course adds considerable weight, but is the best thing to do unless you can afford to build a special light differential.

Q.—What do you know about Katalite? Is it still on the market?

Katalite is a process for treating the surface of combustion chambers or the piston heads of automobile engines. The treatment consists in sand blasting the surface of the casting or piston head and then applying the chemical. The chemical, according to our understanding, has the ability to produce some change in the fuel so that it burns more readily and develops greater power. We understand that Katalite has been used by a well known company making a high priced car for the past year or so with good results. The process is controlled by the National Katalite Corp., 53 W. Jackson Blvd., Chicago.

WEAR MAKES CLUTCH STICK

Q.—On a 1916 Cadillac the clutch does not release very well even when the pedal is pushed all the way in. The gears do not stop and it is hard to get into first speed.—J. R. Jones, Gordonville Garage, Gordonville, Tex.

Considering the age of the car it is quite likely that there is considerable wear in some of the clutch parts. A multiple disc clutch is used, there being eight driving discs and nine driven discs. The driven discs are sheet metal and operate on a hub having six keys. It is possible that after long use the discs have cut little notches in the keys, so that they do not readily slide and may maintain considerable clutch driving pressure even when the pedal has been operated. Wear in the clutch pilot bearing which might cause misalignment would also tend to cause the clutch to bind even with pedal in the release position.

Baker Steam Bus *Has* Automatic Controls

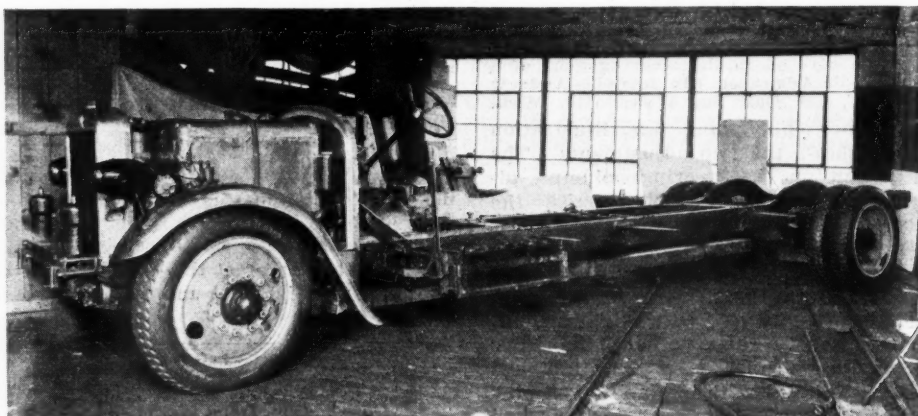
EXHAUSTIVE road tests are now being conducted on a fully-automatic, electrically controlled steam bus chassis embodying several new features in the method of applying steam power to automotive vehicles. The chassis is constructed by the Steam Appliance Corp. of America, Inc., Cleveland, Ohio, and is known as the Baker.

In the development of the chassis the manufacturers have coordinated certain desirable features of conventional bus design with the Baker boiler and steam generator, and the finished model represents a bus chassis which has been designed throughout specially for steam power operation. Complete with the body the bus will sell in the \$10,000 price class. The outstanding feature of the new chassis is the simplicity of operation and the absence of regulating valves and cocks, also there is no clutch or transmission. A conventional foot throttle is provided for covering the speed, and for starting the bus from cold after it has stood for some time the only operation necessary is to turn on a switch similar to an ignition switch on a car. After this is done the firing, water supply and steam pressure is regulated automatically, and the bus is ready to get under way in three to four minutes.

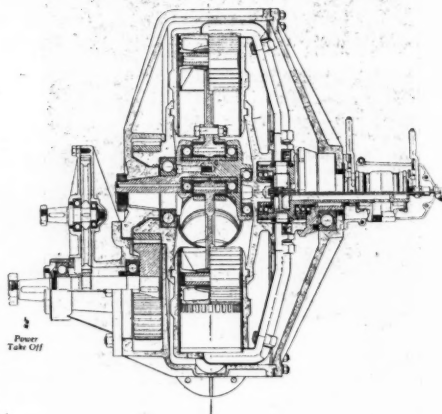
The boiler and steam generator on the new bus chassis are not strictly new developments although they have been modified for this particular type of service. Since 1923 when the Baker Motors, Inc., was formed production has been concentrated on the manufacture of RotoBaker power units which are used extensively in the industrial and mining fields. For over two years the RotoBaker power units of the same general type have received automotive application in five different types of vehicles and the units employed in the bus chassis are an outgrowth of the original industrial RotoBaker power units. In December, 1925, the Steam Vehicle Corp. sub-licensee of Baker Motors Inc., was formed to take over the manufacture of automotive vehicles with RotoBaker power units.

While the chassis is new throughout it follows conventional bus design with the exception, of course, of the powerplant. The new Goodrich special over balloon tires for buses, size 36 by 6 by 7 in. are used. The front springs are secured to the frame at the rear end with the front shackled to Westinghouse shock absorbers while at the rear the springs carrying the Eaton double reduction axle are provided with Lovejoy shock absorbers mounted on a tubular cross member of the frame.

Water is delivered to the generator (boiler) automatically by means of an



New Baker steam bus chassis



Cross section Rotobaker steam engine used in Baker bus chassis.

electrically operated trap. This device consists of a steel bottle filled with water from the rear water supply tank by means of a small gear pump, the latter being driven by a reversible electric motor running at 1750 r.p.m. Inside the bottle is located a special high pressure float actuating a switch which closes the circuit to a solenoid valve which in turn opens and admits steam to the water bottle until the pressure within the bottle equals the pressure within the generator. At this point the water pump is reversed by a mercury tube switch operated by the solenoid valve and the water under the steam pressure is pumped out of the bottle into the generator. To complete the entire cycle approximately 20 seconds is required. In starting the powerplant, the operation of the control switch starts the trap system and brings the water in the steam generator up to the proper level where it automatically breaks the trap circuit. As soon as the water reaches the proper level the fire is started automatically and this prevents the possibility of firing up without a sufficient head of water in the generator. In the system there are no

manually controlled valves or similar devices. Under normal conditions the steam pressure is 600 lb. and the temperature 575 to 625 deg. F. The entire generator is tested to withstand a hydrostatic pressure of 4,000 lb. and designed to have a factor of safety of 10 to 1. The engine has a 6 to 1 factor of safety.

An open fire type burner is used and a small vane fan driven by a two speed electric motor supplies air for combustion. By means of twin Auto-Pulse pumps, fuel is drawn from the 40 gal. tank on the right side of the chassis and delivered to a float feed chamber. From this chamber the fuel is metered through a jet to a mistifying pump, the latter being operated by the blower motor. After the mistifying pump has broken the fuel into a fine fog it is delivered under slight pressure to the burner nozzle. The fuel enters the center of the air stream by the nozzle and in the burner entrance tube it is mixed in the right proportion with the air to form good combustion. Ignition is by a standard spark plug located near the nozzle in the burner tube with a regular automobile breaker and coil used in conjunction.

The engine of the chassis is placed just to the rear of the generator and is a five cylinder rotor reciprocating type with semi-uniflow. Steam is distributed by means of a single balanced valve having three ports and an automatic back pressure relief.

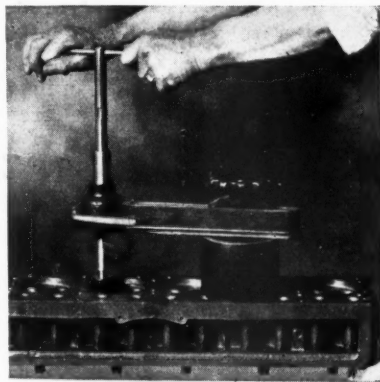
The engine is a self-contained unit entirely enclosed with all moving parts running in oil with the valve and cylinders oiled by a special high pressure lubricator driven off the speedometer drive gear on the rear of the main shaft. Ball and roller bearings are used extensively throughout the engine, the crankshaft being carried fore and aft on ball bearings with smaller ball bearings used in the big end assemblies.

NEW TOOLS FOR SERVICE JOBS

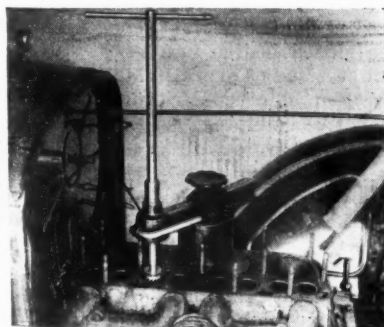
Valve Reseating Equipment

Time on valve grinding jobs is saved and come-backs eliminated as a result of the precision work done in recutting valve seats with the new self-aligning valve reseater manufactured by the Willis-Jones Machinery Co., Inc., of Seattle, Wash.

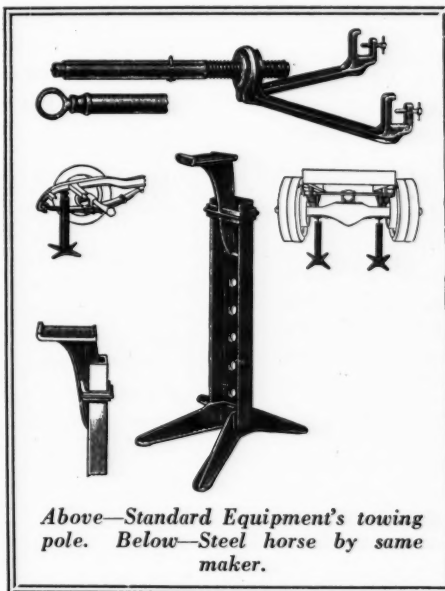
The Willis-Jones tool makes use of an upper bearing. An accurately machined cast iron cylinder is secured to the top of the block, or in the case of overhead valve motors it is attached to the cylinder head by means of a long bolt. To this cylinder is attached a guide bar that can be moved to any desired location by releasing the clamping wheel. At the end of the guide bar is the bearing that carries the shaft of the reseating tool. The reseater shaft is dropped in to the valve guide, the guide bar and bearing are carefully lined up so that there is no binding and then the clamping wheel is tightened to hold the bar. An "L" handle tightens the bearing in place in the end of the bar. The tapered cutter shaft is then raised and the desired cutter is held in place under the shaft bearing. The taper shaft is lightly but smartly inserted in the cutter and the taper makes an amply tight fit. By means of the two bearings (valve guide and upper adjustable bearing) any irregularities or un-



Willis-Jones valve reseater on overhead valve job using cutter for narrowing the valve seat.



Giving the finishing touch to a Dodge Brothers valve reseating job with Willis-Jones equipment.



Above—Standard Equipment's towing pole. Below—Steel horse by same maker.

even hardness can not possibly cause the tool to chatter or run out of true.

If the valve guide is warped away from its original 90 degrees, or true vertical line, we would have a valve seat that is eccentric in shape. The use of cutters of 75 degrees and then 15 degrees with a finishing cut with a 45 degree cutter will give a seat of any desired width and one that is absolutely concentric and perfectly square with the guide.

Hardie's New Model Washer

A car washer which has no part enclosed, hidden or inaccessible is seen in the new model being produced by the Hardie Mfg. Co., Hudson, Mich. Every part of the washer is visible so that the operator may detect any trouble quickly and remedy it. At the same time the makers claim the new Hardie washer is as nearly trouble-free and fool-proof as it could be made.

Some of the conspicuous new features incorporated into this machine are as follows: A self-lubricating system declared to be highly efficient; silent chain drive running on steel sprockets which eliminates drive troubles; die-cast removable springs; adjustable motor base which fits any size motor; larger gears; new pistol grip gun.

This washer is mounted on a pressed steel stand and is made in sizes from one-car to eight-car capacity.

Morong-Greene Spark Plug Cleaner

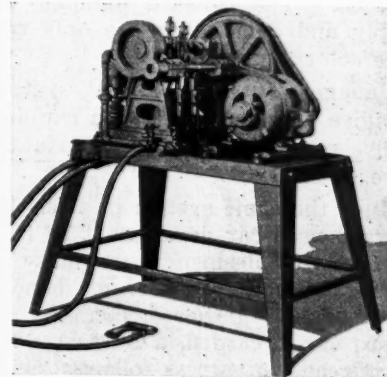
Morong-Greene Automotive Sales, 1018 Commonwealth avenue, Boston, Mass., has a spark plug cleaning machine which it designates as the "Whittz." It is said this machine will thoroughly clean any size or make of spark plug without the use of solvents or wire brushes. The cleaning is quickly accomplished, the time required being about one minute to the plug. The machine operates on the sand blast principle and is readily connected to any air-power line. Its

burnished finish is durable, easily cleaned and will not tarnish. The machine is equipped throughout with nickel-plated fittings. The price in the United States is \$18.

Towing Pole and Steel Horse

Positive control over the rear car is claimed for the "Simplicity" Towing Pole, a product of the Standard Equipment Company, Hales Corners, Wis. It is so designed it cannot buckle or slide out of position and hence can be "braked." An oscillating ball and socket swivel permits short turns. The springs eliminate jars while starting and stopping, thus preventing damage to the differential on the service car in case the towed car is stuck. The towing pole is made of steel and weighs 40 lbs.

"Simplicity" Steel Horses, a product of the same company, besides eliminating blocking, have an offset feature which avoids interference and permits removal of the entire rear end assembly, changing of springs and other work requiring direct hold. They are constructed to give the mechanic as much room as possible in which to work. Made of 3-in. channel steel with cast steel saddle and base, with height adjustable from 12-in. to 18-in. and weighing 45 lbs. a pair. The finish is gray and black enamel.



New Model Hardie Washer



Morong-Greene Spark Plug Cleaner

Speeding Up the Used Car Turnovers

(Continued from page 11)

That is important. At the same time we must be certain to protect ourselves and to protect the next buyer. We must make sufficient allowance to the place the car in first class condition if it warrants it. We recondition most of the cars we take in. Such cars as we sell on an 'as is' basis are sold on price alone and so represented. Salesmen must make it absolutely clear to buyers of 'as is' cars that they carry no guarantees whatever. It is my opinion that 95 per cent of repossession are due to misrepresentation. We will not stand for misrepresentation in our organization.

About 25 per cent of the used cars sold by the Los Angeles concern are featured as "Gold Seal Used Buicks," which carry a full new car guarantee. The "Gold Seal" is only given to Buicks which are not more than three years old. An average of \$210 is spent by the Howard Company in reconditioning the late model Buicks for sale under the gold seal. These cars are merchandised on a high plane, being advertised as a quality product in dignified painted billboards, direct-by-mail, and newspaper campaigns. Approximately \$4 per car is spent for advertising by the used car department.

One of the features of the Howard Automobile Company's used car department is its stock model form. As in any other field of merchandising, the Los Angeles Buick distributor makes its "purchases" of merchandise in its used car department according to an expert analysis of what the market will absorb. Minimum and maximum numbers are set for every model Buick and maximum numbers are set for every other make of car. When the maximum limit established for any one model is exceeded and the stock is not quickly reduced, selling prices are cut. And as selling prices are cut, appraisals likewise are reduced. The Howard Company recognizes the law of supply and demand as the only certain way of gaining satisfactory turnover.

Manager Tuttle says that systematic control of merchandise on sale in the used car department of the automotive retailer is just as important as in any other retail store.

Much the same system in sales direction is used in the Howard used car department as in the new car sales department. Salesmen must make daily reports of the number of calls, number of demonstrations, number of new prospects gathered, etc. As soon as a prospect for a used car is carded, a four-page letter is mailed to him which reads in part as follows:

"The number of used cars sold by the Howard Automobile Company in Los Angeles will exceed the two million dollar mark for a year's business at the rate they have been selling in the past several months. What does this mean? It means that the Howard Automobile Company must surely be selling automobiles, not only at the lowest possible price consistent with quality but have established a reputation for fair dealing in the used car field that is bringing them more and more trade every day through the boosting of those who have purchased automobiles from this company.

"When we were advised that you had looked over our complete stock of used cars, we thought we should call your attention to four factors that are responsible for our tremendous volume of used car business.

"First, the right kind of automobiles. Second, the right kind of price. Third, the right kind of guarantee, and fourth, a guarantee by an old-established house, and the largest, distributors of automobiles in the world.

"We sincerely trust that we will soon welcome you into our ever-growing family of enthusiastic owners of used cars."

The inside two pages of the letter show views in the shops and in the used car sales department.

When the prospect has been turned into a customer, with the purchase of a used car, he receives another four page letter, which reads as follows:

"Permit us to acknowledge the receipt of, and thank you for, the order you gave us recently for a used car.

"It is indeed a pleasure for us to learn you have placed confidence in us to the extent of making your purchase through the Howard Automobile Company, and we hope you will be so pleased with your investment, that your next purchase will be a late model Buick.

"Again thanking you for the order and hoping you will let us hear from you frequently, we are
"Yours very truly,"

The inside pages of this four-page letter presents the new car appeal. The Howard Automobile Company has found that a large proportion of its used car buyers later become purchasers of new Buicks.

The Howard Automobile Company is putting system, efficiency and sound merchandising methods behind its used car selling. And it is getting results—surely and consistently.

New Chrysler "50"

(Continued from page 20)

ball thrust bearings at steering knuckle heads and with the springs over-mounted. Bronze bushings $\frac{3}{4}$ in. inside diameter by $1\frac{1}{2}$ in. long are provided for the yokes, while both steering arms and knuckles are of chrome-nickel forgings. The steering gear is of the semi-irreversible worm and sector type of Gemmer make and connection with the steering arm is through a straight drag link.

Brakes on Two Wheels

Springs are semi-elliptics all around, those on the front being $35\frac{1}{2}$ in. long by $1\frac{3}{4}$ in. wide and 9 leaves, while those at the rear are $53\frac{1}{2}$ in. long by $1\frac{3}{4}$ in. wide, having 8 leaves when used with the coupe and 9 for the sedan. The frame is of the straight taper type with a kick-up

over the rear axle. Including the rear engine mounting there are four frame cross members, while the side channels are 5 in. deep, the stock $9/64$ in. and the width of the flanges $1\frac{1}{4}$ in. at center section. Brakes are of the conventional two wheel external contracting type, operating on drums 12 in. diameter by $1\frac{3}{4}$ in. wide. A special feature is an equalizing lever on the cross rod connecting with the two brake pull rods. The emergency lever operates directly on a drum $2\frac{1}{4}$ in. wide by 5 in. diameter placed immediately behind the transmission. Chassis lubrication is by the Zerk system. Wooden artillery wheels with demountable rims are used on all body models.

All bodies are finished in special shades of Duco lacquer. Both coach and sedan models are upholstered in a soft

woolen texture with the 2 passenger model finished in gray Spanish leather for the seats with imitation leather on the flat surfaces. Interior hardware is in satin finish. Color schemes on the three closed bodies follow:

Coupe—Body overall Mallard Green with Pistachio green striping. Black wheels with striping.

Coach—Sheraton gray with black upperstructure and the striping in Flamingo Carmine. Wheels gray and striped.

Sedan—Marine blue with black upperstructure and gold bronze striping and wheels blue with striping.

Standard equipment on these models includes cowl lights, hand windshield cleaner, rear view mirror, rear curtain, visor, transmission lock, and a dome light, foot rests and robe rails on the sedan.

EDITORIAL

Business Is Good

WE are well along in the second half of the year and business is reported good from almost all sections of the country. Automobile sales and production are holding up better than was generally expected, although thoughtful students of economic conditions have insisted all this year that there should not be any disturbing recession in the summer.

September is just around the corner and with it comes school, the end of vacations, the marketing of crops and a general air of activity that will be intensified as we move on toward Christmas and that most certainly will stimulate business.

Automotive dealers generally are in a good position to make the best of the season. In some places stocks of new cars are too high and of course there are always too many used cars, but dealers are learning how to handle their used cars so that losses will not be so heavy.

The important thing now is that factories recognize the limitations of the trade and be careful not to crowd too many new cars upon the dealers. A good volume of production is under way and can be maintained or even increased a reasonable amount, but if cars are poured upon the market in quantities beyond the reasonable capacity of the various territories to absorb them the result will be unfortunate for both dealer and manufacturer.

Common sense business principles applied strictly for the rest of this year will mean that 1926 will end as the greatest year the automotive industry has ever had.

Motoring in the Air

WINGING their way through the middle west as this is written the airplanes entered in the second commercial airplane reliability tour are making a new kind of automotive history. They are proving today the dependability and practicability of the flying machine just as the soundness of the automobile was demonstrated years ago in the famous Glidden tours.

When 24 of these new automotive masters of the air dropped lightly to the ground on the Government's air mail field at Maywood, near Chicago, thousands of persons from the great metropolis were on hand to view them, but it was noticeable that in the official reception of the flyers the organized automotive industry was not represented.

And yet the aviation industry is so closely allied to the automotive industry that it has much in common with the motor vehicle. Motor vehicles and airplanes both use tires, oil and gasoline. Both are equipped with internal combustion engines with pistons, valves, connecting rods, crankshafts, radiators, and other devices in common. Many of the same tools that are useful in the automotive shop also have their place in the airplane shop.

In view of the tremendous possible and almost certain development of the aviation industry it seems that the manufacturing division of the automotive industry would be more actively interested in participating in the early stages of that growth. The Ford Motor Co., it is true,

is doing probably more than any other organization or individual, except the Post Office Department, to popularize and demonstrate the utility of air transport.

But the Ford company's interest apparently lies in the direction of manufacture of the air vehicle. In the aviation industry, just as in the automotive industry, there will come a time when the business of maintenance and supply will equal or excel the business of producing new craft.

The progress of aviation is, therefore, of immediate importance to the whole automotive industry, not that it is likely to supplant this business, but that it offers a parallel development in a great part of which the existing automotive industry might well be expected to share. The needs of this new transportation industry will be cared for and if the older automotive establishments do not provide the facilities there will be new ones arise to do the job.

"Not Much Improvement"

THE car owner with an old vehicle to peddle is likely to say, "After all the new cars are not much improvement over this good old boat of mine." And once in a while a dealer will nonchalantly agree with him, adding the trite remark that "automobiles have about reached the limit of their development."

Any car owner or any dealer who will sponsor such an absurd statement either has a selfish purpose to serve or is utterly lacking in appreciation of the things that are going on in this industry. We are sure that no dealer who is a consistent reader of MOTOR AGE would agree for a moment to so backward a proposition. The editorial columns of MOTOR AGE are a weekly history of progress in the most progressive of American industries.

The car of today is incomparably superior to the car of three or even two years ago. Improvements that have not been spectacular and thus may have escaped public notice have been made so that in the matter of performance, comfort, speed, safety and convenience the modern vehicle far surpasses its older brothers. Several manufacturers who no longer produce yearly models are constantly incorporating improvements in their vehicles.

Taking it all in all the chap with a car to trade that is as much as three years old has a pretty antiquated old cart.

Sensible Signs

RECENT developments in Chicago have done much to make it possible for the motorist to enjoy the use of his car without persecution. Half a dozen or so grand jury indictments have been returned against police officers and local magistrates in suburban communities on various criminal charges in connection with speed trap operations. One of the most flagrant persecutors of motorists is charged with robbery with a gun and other serious offenses and is at liberty under \$18,000 bond. The Chicago Motor Club and the State's Attorney of Cook County deserve the credit for this movement in behalf of law abiding motorists. There is much need for such work in other cities and communities.

NEW YORK SHOW TO HAVE

Provide for Commercial Vehicle Exhibit at Palace

M. & A. M. A. Committee Is Planning an Action Display of the Modern Shop

NEW YORK, Aug. 14.—A light truck section will be included in the New York automobile show in Grand Central Palace January 8 to 15, inclusive, the show committee of the National Automobile Chamber of Commerce announced.

Due to limited elevator capacity, a maximum of overall length of 18 feet, six inches has been prescribed for the trucks, which will be shown on the third floor. This will be the first time trucks have been shown in connection with the regular passenger car exhibits.

The first and second floors of Grand Central Palace will be devoted to passenger cars, part of the third floor to trucks and the remainder to accessories.

The fourth floor will contain the taxicab and shop equipment exhibits and also accessories.

There will be no trucks displayed at the Chicago show but special sections will be devoted to taxicab and shop equipment exhibits.

The Chicago show will be held at the Coliseum from January 29 to February 5.

Planning Equipment Exhibits

NEW YORK, Aug. 18.—Plans have been worked out by the Service Equipment Committee of the Motor & Accessory Manufacturers Association and approved by Sam Miles, show manager of the National Automobile Chamber of Commerce, for the service equipment exhibits that will be an important part of the national automobile shows in New York and Chicago next January.

Discussing these plans, Neal G. Adair, manager of the Show and Educational Departments of the M. & A. M. A., declared that the equipment exhibit in connection with the New York show would be located on the fourth floor of the Grand Central Palace, providing ample space.

Each day until a late afternoon hour, it is the plan to close the display to the general public so exhibitors may deal only with the trade. In the evening the exhibit will be open to the public.

At Chicago the gallery of the new North Hall will be used. This will afford good exhibit space and make possible segregation from the show.

Arrangements will be made for the necessary constructive placards to show what the exhibits are all about and to facilitate their operation.

Service equipment makers are showing

a good deal of interest and it is indicated in both shows it will be a question of getting the exhibitors in and accommodating them rather than running out to get enough to fill the space.

Larger Buick Deliveries

DETROIT, Aug. 16.—E. T. Strong, general sales manager of the Buick Motor Company, announces retail deliveries for the fiscal year 1926 ending July 31 of 240,424 cars, surpassing the best previous sales of any fiscal year by the remarkable total of 69,375 cars.

This sales total places Buick far in the lead of all manufacturers selling cars priced at more than \$1,000, and exceeds the sales of all other makes but a few in the low priced, four cylinder group, Mr. Strong declares.

The production capacity of the plant has been increased to 1,200 cars a day, so that if necessary the company can produce in excess of 300,000 cars a year. The \$2,000,000 recently expended for expansion, says Mr. Strong, was partly utilized to effect manufacturing economies which have aided materially in keeping Buick prices at their present low level.

Speed Output at Nash

KENOSHA, Wis., Aug. 14.—Reports from the Nash Motors Company say that while July Nash output was retarded to permit a start on new models production is proceeding at the fastest rate that Nash has ever attained in bringing out new models. By the end of August it is declared, the eight months total will exceed the total volume of 96,121 cars for the entire year of 1925 which was by far the biggest previous Nash year. Heavy Light Six sales are especially pleasing to E. H. McCarty, Nash general sales manager, who predicts that Light Six production for August will be the largest yet for any single month.

AC Air Cleaner on Jewett

FLINT, Aug. 15.—Beginning today, all Jewett automobiles will be equipped with a continuous discharge type AC Air Cleaner, the AC Spark Plug Co. announces. AC air cleaners are now used by Buick, Chandler, Cleveland, Locomobile, Nash, Oakland, Oldsmobile and Willys-Overland.

Stutz Uses Fedco System

INDIANAPOLIS, Ind., Aug. 14.—The Fedco system of numbering cars and protecting them against theft has been adopted by the Stutz Motor Car Co. of America. The Fedco number plate cannot be changed without leaving evidence of having been tampered with. In addition every car bearing one of these number plates is registered with a national detective agency which uses all its resources to recover such cars when stolen and to punish the thief.

G. M. Had Big July

DETROIT, Aug. 18.—Retail sales in July by General Motors distributors and dealers totaled 101,576 cars and trucks. This compares with 65,872 in July, 1925, and 60,836 in July, 1924, an increase of 54 per cent over the corresponding month a year ago.

Retail sales by General Motors have shown a decline each month since May, at which time the corporation established a new record. This decline is in line with the usual trend of sales during these months of the year, the corporation declares.

The corporation's sales to dealers for July reflect the same seasonal tendency as manufacturing operations were curtailed on account of the introduction of new models at this time of the year. Also for the same reason, the Corporation's sales to dealers in August are expected to substantially increase.

Sales by months follow:

Divisions Sales to Dealers			
	1926	1925	1924
Jan.	53,698	25,593	33,574
Feb.	64,971	39,579	50,007
Mar.	106,051	70,594	57,205
Apr.	136,643	97,242	89,583
May	141,651	87,488	84,715
June	117,176	75,864	65,224
July	101,576	65,872	60,836
7 months	721,766	462,232	441,144

Dealers to Users			
	1926	1925	1924
Jan.	76,332	30,642	61,398
Feb.	91,313	49,146	78,668
Mar.	113,341	75,527	75,484
Apr.	122,742	85,583	58,600
May	120,979	77,223	45,965
June	111,380	71,088	32,984
July	87,643	57,358	40,563
7 months	723,730	446,567	393,662

These figures include passenger cars and trucks sold in the United States, Dominion of Canada and overseas by the Chevrolet, Pontiac, Oldsmobile, Oakland, Buick and Cadillac manufacturing divisions of General Motors.

Pierce Reduces One Price

BUFFALO, N. Y., Aug. 13.—Pierce-Arrow Motor Car Co., today announced the first Pierce-Arrow enclosed car to sell under \$3,000. This car, Series 3, custom built, two-door coach, was reduced in price from \$3,150 to \$2,995 at Buffalo.

Extra Timken Dividend

CLEVELAND, Aug. 14.—Timken Roller Bearing directors have declared a quarterly dividend of \$1 a share and \$25 extra payable Sept. 4. Three months ago the company declared a dividend of 75 cents regular and 25 cents extra.

SECTION FOR LIGHT TRUCKS

Weymann to Operate in U. S.

PARIS, Aug. 4.—(By Mail)—Weymann fabric leather flexible bodies are to be built in America by the Weymann Motor Body Company, now under formation. The company will be located at the Old National factory, at Indianapolis, and, it is declared, will be in full operation before the end of the year building bodies for the trade.

Uniting European and American capital, the new concern will doubtless have at its head the president of one of the leading American automobile companies, but technical control will remain with Charles T. Weymann, the inventor of this body. F. E. Moscovics, Stutz president, now in Europe, has been instrumental in deciding the new company to select Indianapolis as its manufacturing center, and has completed arrangements whereby the company will take immediate possession of the National factory. The entire capital of the Weymann Motor Body Company has been subscribed privately and no stock will be offered to the public.

Immediately after the Paris show, Charles T. Weymann will sail for America in order to organize the Indianapolis plant and to produce body designs for the American market. The intention appears to be to form a holding company which, as in the case of the parent company in France, will be empowered to grant manufacturing licenses. With the exception of Citroen, who is producing Budd bodies, practically every automobile manufacturer in France holds a Weymann license.

Small Marmon Soon Ready

INDIANAPOLIS, IND., Aug. 17.—It is announced by the Marmon Motor Car Co. that the new small Marmon will be ready in the latter part of September for private showing to dealers. It is said the new car is capable of a sustained speed of 70 miles an hour for hour after hour.

Chrysler Earnings

NEW YORK, Aug. 14.—Report of the Chrysler Corp. and its subsidiaries for the six months ended June 30, 1926, shows profit of \$9,016,245 after charges but before federal taxes, equivalent after allowance for dividend requirements on the \$8 preferred stock to \$3.01 a share earned on 2,705,090 shares of no par common stock. This compares with \$8,197,000, or \$2.70 a share on common figured on the present share basis in the first half of 1925.

For the June quarter profit was \$4,904,156 equal to \$1.65 a share on common, comparing with \$4,112,089, or \$1.36 a share in the preceding quarter, and \$4,689,000, or \$1.57 a share on the present common shares in second quarter of 1925.

Net current assets on June 30, 1926,

were \$26,278,23, comparing with \$24,917,142 on the same date last year.

Walter P. Chrysler, chairman, amplified the financial statement with an analysis of the company's progress in the last year. He said sales for the first half of this year show an increase of 37 per cent compared with the corresponding period last year, and that export business had made an unusually favorable showing for the first half of this year, having reached 154 per cent of the export business for the first half of 1925 and equaling nine per cent on all business done. He declared that the importance of the export business as a stabilizing factor cannot be overestimated.

The regular quarterly common dividend of 57 cents, payable September 30 to stockholders of record July 15, also was declared.

G. M. Orders Stock Dividend

NEW YORK, Aug. 13.—A stock dividend of 50 per cent, which at the current market price of the stock is equivalent to approximately \$600,000,000, was declared by directors of General Motors Corp., at a meeting held here yesterday. In addition a regular quarterly cash dividend of \$1.75 per share on the common stock, including the stock to be issued as a dividend, and all payable September 11, 1926, to stockholders of record at the close of business on August 21, 1926, was announced.

Alfred P. Sloan, Jr., president of the corporation, supplemented the financial statement with the brief observation that "the outlook at the present time is satisfactory."

The chief surprise accompanying the cutting of the General Motors melon was the decision by the board of directors that the regular quarterly dividend of 1 1/4 per cent, has applied to the additional stock as well as to the outstanding.

Many Makers Oversold

NEW YORK, Aug. 16.—Presentation of new models by many leading companies during the past month has brought about an oversold condition in several lines. While a considerable portion of this is because manufacturers have not been able as yet to reach large production. It also is considerably due to the fact that the new cars have struck public fancy to fully as great an extent as in any former fall season and indicates that a very favorable market may be looked for during the lull between old and new model production. Dealers in many sections have been able to reduce used car stocks at least to an extent enabling them to do any trading necessary to moving new cars in good volume. This favorable retail condition promises to remain for at least several months and possibly may run through the year.

Salon Plans Include a Show for Pacific Coast

Exhibition of Coach Chassis Set for Feb. 12-19 at Los Angeles, Cal.

NEW YORK, Aug. 14.—Preliminary announcement of the dates and plans of the annual Automobile Salon for the 1926-1927 season disclosed that an exhibition will be held for the first time in Los Angeles following those at New York and Chicago. This decision is of special interest as it is understood that strenuous efforts were made to bring the Salon to Palm Beach, Florida.

The dates for the coming season are: Hotel Commodore, New York, November 24th to December 4th; Hotel Drake, Chicago January 29th to February 5th; Hotel Biltmore, Los Angeles, February 12 to 19th.

As a result of the excellent sales success of both the New York and Chicago salons last season the demand for exhibition space at the three forthcoming exhibitions exceeds the capacity of the various ball rooms. The management is endeavoring to include all of last year's exhibitors as well as a few of the new applicants.

Among the new applicants is a prominent Parisian carroserie and a foreign car which has not been exhibited in this country for several years. The special exhibits of custom body builders will be even larger than last year and it is asserted that the salon will disclose some real developments in the art of carroserie.

Chrysler Advances Three

DETROIT, Aug. 14.—Promotion of three men in the sales division of the Chrysler Corp., were announced today.

John McArdle, who has been associated with the Chrysler sales department for five years, becomes assistant to Mr. Fields.

Earl B. Wilson takes charge of the company's Chicago, Cleveland, New Orleans, Omaha, Philadelphia and Portland district.

Forrest H. Akers will assist J. W. Frazer as director of the Dallas, Detroit, Minneapolis, New York and St. Louis districts.

Heavy Demand for Cars

WINDSOR, Ont., Aug. 14.—According to Ford officials, the demand for cars from the Ford Motor Co.'s Canadian plant, here, is higher than at any time for this period of the year. The factory is being operated on a full-time schedule.

The prospect for a good crop in the west is one of the factors, it is said, for stimulating the sale of automobiles.

Raise Auto Insurance Rates in Several Cities

Personal Injury and Liability Protection Schedules are Revised Upward

NEW YORK, Aug. 14.—A scientific study of several years' experience, has indicated the necessity for an increase in the rates of personal injury and liability on private passenger and commercial vehicles in several cities, according to a statement issued by the National Bureau of Casualty & Surety Underwriters. The rates have been made effective immediately.

The increases in Albany, Schenectady and Troy in New York state are 25 per cent on private and commercial automobiles for personal injury and liability coverage.

Public liability rates in Philadelphia were raised approximately ten per cent for private and commercial cars.

In Youngstown, Ohio, the rates have been raised approximately 30 per cent on all types of cars.

A revision has been made in New York City in rates for public liability and property damage for specific classes of passenger carrying automobiles, which means buses principally. In New York State these must carry either an insurance policy or a bond.

A new schedule of rates, which has been accepted by the State Insurance Department, has been developed by the National Bureau. This schedule applies to public livery automobiles and buses only. These represent increases of approximately 40 per cent for public liability and 26 per cent for property damage.

A. E. A. Show Contracts Out

CHICAGO, Aug. 14.—Contracts have been sent out for the annual show of the Automotive Equipment Association to be held Nov. 8 to 13 at the Coliseum in Chicago. Drawings for space will be held Sept. 29 at the Congress hotel. This year, as last, the show will occupy the entire available space in the Coliseum, including the north and south halls. Attendance by jobbers other than members of the A. E. A. will be by invitation only. Those to whom invitations are issued will be selected carefully.

Distributing Buicks

GALESBURG, Ill., Aug. 14.—Maurice J. Somerville of Peoria, is the new Buick distributor here, having purchased the agency of the Killeen-Buick Company at 79 North Cherry street. He succeeds Paul J. Killeen who goes to Joliet, this state, to distribute the same car.

Sell Used Fords

PROVO, Utah, Aug. 14.—The Whitten Used Ford Car Market is the name of a new concern just organized in Provo to handle used Ford cars exclusively. L. M. Brian is to be manager.

McCosker Distributor for Moon and Diana



David McCosker

David McCosker until recently assistant to President Stewart MacDonald of the Moon Motor Car Company has been appointed distributor for Moon and Diana cars for the 47 northern counties of California and the State of Nevada, with headquarters at San Francisco and a branch at Oakland. In taking over the wholesale distribution for Moon and Diana in that territory Mr. McCosker has behind him much valuable experience in merchandising motor cars.

Prior to his connection with the Moon organization McCosker was for a number of years a regional director for one of the larger car manufacturers.

The McCosker organization will maintain complete stocks of Moon and Diana cars in warehouses in both San Francisco and Oakland, these warehouses being arranged with the idea of convenience to the dealers when they visit this market for cars.

Picks Off Franklin Prizes

MILWAUKEE, Aug. 14.—George H. Williams, of the Sanger-Williams Co., Milwaukee, Franklin distributor, won first prize in each of three groups of a contest conducted by the Franklin factory during the second quarter of 1926, breaking all records for Franklin salesmen and increasing his private fortune by \$492.50. Mr. Williams not only won in his own class but stepped into the next two higher classes of the national contest.

Increase Floor Space

SALT LAKE CITY, Utah, Aug. 14.—The Hanson Auto Co., Ford dealers, of this city, is adding 10,200 square feet of space to its establishment. The company claims the distinction of being the oldest Ford dealer in the city.

Hanch Sees a Tendency Towards Stronger Credits

Letters from Bankers Indicate Improvement in Time Sales Practices

CHICAGO, Aug. 16.—The campaign for sounder automobile financing being conducted by the National Association of Finance Companies is getting positive results, according to C. C. Hanch, general manager of the association.

Mr. Hanch declares that letters received by him from leading bankers in many sections of the country plainly reveal a tendency in the direction of saner practices by finance companies and consequently improved credit policies on the part of automobile dealers.

Approval by bankers of the association's efforts to put automobile time sales on a safe and conservative basis is another gratifying note in these communications, says Mr. Hanch. Practically all of the letters implicitly or directly endorse the association's time-sales policy which places set restrictions upon down payments and extensions.

The letters to which reference is made have been received by Mr. Hanch as the result of a national campaign from his office to feel out the sentiment of bankers with respect to the association's time-sales program and to learn through the bankers whether there has been local improvement in the matter of automobile financing. Mr. Hanch took up the investigation directly with heads of banks, themselves, with personal letters to each one. The exhaustive character of numbers of the replies and the promptness with which the answers came are suggestions of the interest aroused.

These letters indicate marked improvement in time-sales situations in certain localities where especially bad practices have been prevalent. Time extensions are being shortened and larger down-payment rules are being adhered to. It is found, too, that some banks have adopted policies which substantially carry into execution the crediting principles advocated by the association. "As this is an educational movement," said Mr. Hanch, "we can not expect great overnight success, but it is apparent our campaign is taking hold and that there has been an actual improvement in the general situation."

Open New Sales Unit

LOS ANGELES, Aug. 14.—The Paul G. Hoffman Company, of Los Angeles, Studebaker distributors, recently opened its newest addition to its series of sales headquarters and service depots in Beverly Hills. The new unit is in charge of J. H. Irvin, who has been assistant sales manager of the Hoffman organization. The service department is in charge of Carl Marquard, formerly with the Hoffman Hollywood store.

These Dealers Meet to Learn



Convention of Stewart-Warner dealers at St. Louis under auspices of Dan F. Hylan

ST. LOUIS, Aug. 14.—Dan F. Hylan, manager of the St. Louis station of the Stewart-Warner Co., believes that his dealers should all be acquainted with the merchandise they are selling. In order to make sure that all his dealers were thoroughly informed about the products they are selling he called a convention last week of the 50 dealers in his territory handling Stewart-Warner products and had a number of experts on hand to give them full instruction on displaying, selling and servicing Stewart-Warner products.

Association Rout Resale Swindle

NEWARK, N. J., Aug. 16.—A used car swindle that resulted in considerable losses to a number of car owners and threatened to interfere with legitimate trade was recently driven out of Newark after a few weeks of operation through the efforts of the Newark Automobile Trade Association.

The scheme was cleverly designed to make it appear to be within the law and this made the job of stopping it the more difficult.

According to a bulletin issued by the Newark trade association the operators of this scheme advertised in the newspapers under the heading automobiles wanted. When a man with a used car to sell showed up he was told that they had a customer for just his kind of car and offered to buy it from him, usually at double the Blue Book listing. This was the bait. But their customer did not want the car until about two months later, so they would pay him, in the case of a \$1400 car (worth about \$550), \$100 down on it and give him a post dated check as of two months later, for the balance.

Bills of sale were transferred and the car shipped out of the territory immediately, and only a few cars were kept for display in the show windows. The operators expected to be gone with their spoils long before their post dated checks were presented and when the investigators for the trade association got on their trail they immediately skipped.

To Standardize Resales

SAN ANTONIO, Texas, Aug. 16.—San Antonio automobile dealers who are members of the San Antonio Automotive Trades Association are going to standardize used cars and their prices.

The dealers have formed a used car bureau. They have employed a firm of

expert accountants who will inspect the books of the various dealers and learn just what was paid for various makes and models of cars, what amount was spent in reconditioning them, re-tiring them and repainting them. In addition, the accountants will find just what the various makes and models sold for after they were reconditioned by the dealers.

With this data in hand the accountants will arrange a list of the used cars taken in trade by the dealers of San Antonio, showing the makes alphabetically, and the year model. In another column will be shown the amount spent for repairs necessary to place on the market, and in another column, the actual prices received for the cars.

With this tabulation from each dealer in form the bureau will hold a conference with the accounting firm present, and begin to plan for stabilization of used car prices and standardization of products offered for sale.

When that is done the members of the used car bureau will establish a price which will be allowed for used cars in trades, listing each make and year. These figures or prices will be published twice monthly with a view of acquainting the car owners who wish to trade their old cars on new ones with just what they will be allowed on the deal.

Revised Race Schedule

WASHINGTON, D. C., Aug. 16.—As far as can be determined now, says an announcement by the American Automobile Association, the following meets only are contemplated for drivers and cars of the championship class during the remainder of the year:

Charlotte, N. C., Aug. 23; Altoona, Pa., Sept. 6; Detroit, Mich., Sept. 11; Salem, N. H., Oct. 12; Laurel, Md., Oct. 23; Los Angeles, Nov. 25.

The foregoing supersedes all previous schedules released, according to Val Haresnape, A. A. A. contest board manager.

Parts-Accessory Exports For 6 Months \$50,300,383

Increase Over First Half of
Last Year More Than
16 Per Cent

WASHINGTON, Aug. 14.—The total value of parts and accessories, exclusive of engines and tires, exported from the United States during the first six months of this year was \$50,300,383 or 27.6 per cent of the total automotive exports during that period amounting to \$182,066,573. During the first half of 1925, \$43,128,817 automobile parts were exported making up slightly less than 26 per cent of the combined automotive exports amounting to \$166,457,821.

The Automotive Division of the Department of Commerce, in commenting on the statistics states that, viewing in another way the position of accessory and part exports in relationship to total exports of automotive products, the value of foreign shipments of the former increased 16.6 per cent while that of the latter gained 9.4 per cent.

Automobile engine exports which are not included in the foregoing comparisons, except as a part of the total export figures, declined 8.3 per cent in number and 15 per cent in value when 85,886 valued at \$8,215,152 were exported as compared with 93,680 valued at \$9,661,270 during the first half of 1925.

Canadian exports of automobile parts increased slightly over 32 per cent over the six months period of last year, when they were valued at \$2,461,718 as compared with the 1926 valuation of \$3,252,602.

Hartz Looks Like Champion

WASHINGTON, Aug. 14.—Harry Hartz, veteran automobile race driver, having won a total of 2,194 points in the present season appears a certain winner of the racing championship of 1926, it is announced by the contest board of the American Automobile Association. Peter De Paolo with 1,475 points is the only driver having a chance to beat Hartz out and he must perform amazingly for the remainder of the season to accomplish this feat.

The standing of the eight next highest follow: Bennett Hill, 867, Frank Lockhart, 825, Herman Batten, 615, Fred Comer, 594, Earl Devore, 525, Dave Lewis, 500, Earl Cooper, 415, and Frank Elliott, 382.

Highway Fatalities Fewer

WASHINGTON, Aug. 14.—Automobile fatalities in the 78 selected cities were less for the four week period ending July 24 than for the corresponding period in 1925, the Department of Commerce announces. Deaths reported were 484, compared with 492 in 1925.

"Big Six" with 137,000 Miles to Its Credit Wins Old-Timers' Economy Run

LOS ANGELES, Aug. 14.—One of the best publicity stunts annually staged in western automobile distributing circles is the old-timers' economy run conducted by the Los Angeles branch of the Studebaker Corporation of America, which limits participants to Studebakers having gone 100,000 miles or more. This year's event, just concluded, was won by a Studebaker Big Six entered by Glenn E. Thomas Company, Inc., of Long Beach, which had 137,000 miles to its credit. It checked in after the long mountainous drive to Lake Arrowhead with a score of 20.73 miles to the gallon of gasoline. The second place was taken by C. E. Elson, Studebaker dealer of San Bernardino, who entered an owner's car with a mileage record of 118,000 miles, and which averaged 20.42 miles to the gallon of gas. Third place was taken by a big six with 120,000 miles to its credit, entered by S. D. Brockman, Studebaker dealer at El Monte.

Two veteran big sixes, owned by the Associated Transit Company of Los Angeles, were entered by the Paul G. Hoffman Co., Los Angeles, Studebaker distributors. One of these with 311,000 miles to its credit, succeeded in service the famous "Granddaddy" Studebaker with 475,000 miles to its credit when it was taken back to the factory for the South Bend Studebaker Museum. The 311,000-mile car, driven by M. J. Weilenman, averaged 17.31 miles to the gallon, and the other, with 220,000 miles to its credit, delivered 17 miles to the gallon.

The winning car's driver was presented with a solid gold watch from A. W. Maxwell, Studebaker branch manager in Los Angeles, and in addition a beautiful silver trophy by the Gilmore Oil Company.

Made Sales Supervisor

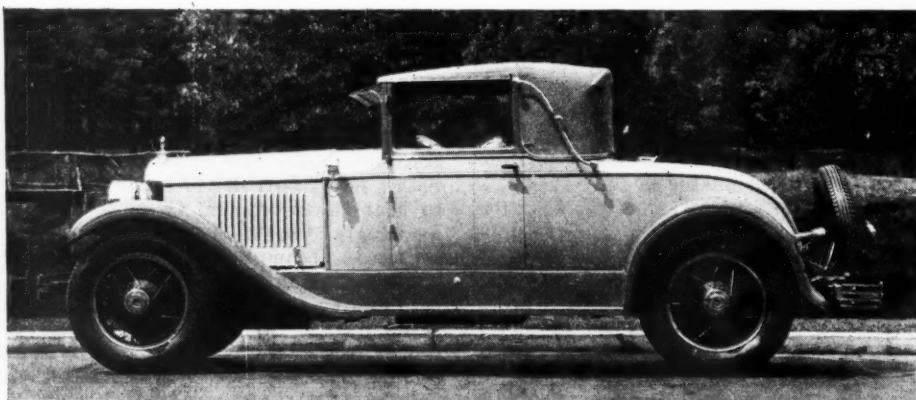
SPRINGFIELD, O., Aug. 14.—The Kelly-Springfield Truck and Bus Co. announces appointment of A. L. Alexander as supervisor of sales and Harry LaForge, supervisor of branches. Mr. Alexander has been in the logging territory and has his headquarters at Seattle, Wash. Mr. LaForge has been supervising organization of the sales department on the west coast. In his new position he will receive reports from the branch salesmen and he will report to E. T. Herbig, sales manager.

Increase Floor Space

SEATTLE, Wash., Aug. 14.—The packard Seattle Company, Packard distributors for Western Washington, has added 14,000 square feet of floor space to care for a steadily increasing volume of business, by the construction of an additional wing to the building now occupied by the firm.

Under the new arrangement the old portion that served as a service department is now converted into a new car delivery room. The service department has been moved into the new quarters.

Cadillac Offers New Convertible Coupe



New Cadillac convertible coupe with rumble seat

ATWO-PASSENGER coupe, convertible at will from a smart, custom-built closed car to a roadster is this new body model just produced by Fisher for the Cadillac chassis. In the rear deck are a rumble seat and golf compartment.

With the rumble seat occupied by passengers and the top up, the back panel of the top folds up against the roof, providing the same companionship as in a phaeton or coupe. The door-and-window construction is exceptionally rigid and rattle proof.

French Tire Prices Are Raised After Franc's Drop

Michelin Takes Lead in Boosting Movement with Increase of 20 Per Cent

PARIS, Aug. 3. (By Mail)—As a result of the drop in the value of the franc, Michelin increased all tire prices 20 per cent, and the movement was immediately followed by all other tire manufacturers. Although uncertainty reigns, and no maker is prepared to give guarantees for future deliveries, car prices have not increased as much as might have been expected. The most important changes have been made by Citroen, who since March has increased his chassis price from 17,690 to 21,750 francs; the phaeton from 20,000 to 26,500 francs; the standard sedan from 25,000 to 31,000, and luxury sedan from 28,230 to 35,300 francs.

Renault's prices have been increased in much smaller proportion, the 6 h.p. chassis which in March listed at 11,650 francs, was increased to 14,900 francs in June and has not changed since; the phaeton has been increased only 500 francs and the sedan 700 francs.

Many firms, including Talbot and Fiat, are taking orders without any guarantee as to price, the client being free to cancel if he considers the price too high on date of delivery. Others, including Bugatti, quote in francs on a dollar basis, with variations according to exchange rates. Exporters state that business is phenomenally good, but are convinced that sales will drop as prices rise. Meanwhile all factories are working at high pressure.

Optimistic for Chrysler

DETROIT, Aug. 14.—A great future in Europe for the Chrysler line of cars, was predicted in an interview by Arnold de la Poer, managing director of Chrysler Motors, Ltd., of London, England, Chrysler distributor for the British Isles, who is visiting the factory, here. The Chrysler design, he said, is finding wide favor among European car buyers.

"We feel that the future of the Chrysler in England is established," he said. "While automobile sales in general in England are less this year, than a year ago, our sales are above last year. At the present moment we have the smallest stock on hand in our history and I just placed on order for 300 more to be shipped in the next two months."

If the British government will work out a plan for a petrol tax, similar to the gasoline tax in the United States, it will have an enormous effect on the sale of all vehicles of over 15 horsepower, he said.

The time has arrived when the British manufacturers will favor a change of this nature, for the present horsepower tax practically compels them to manufacture a car which finds favor only in England, eliminating their opportunities in the export field.

1926 Legislatures Pass Several Automotive Bills

Gasoline Tax Increases Put Into Effect by Three Different States

NEW YORK, Aug. 16.—Although only nine state legislatures met during the 1926 season now drawing to a close, several bills were passed of considerable interest to the car and truck industry, it was learned from Russel Huffman, secretary of the Motor Vehicle Conference Committee.

Three states increased the gasoline tax, Virginia raising it from three to four and one-half cents per gallon, Kentucky from three to five cents and Mississippi from three to four cents.

Virginia slightly increased its registration fees for all vehicles, while Kentucky made a considerable increase in its fees for vehicles for hire.

In the field of common carrier legislation, the states were quite active. Mississippi passed a law placing such vehicles under the railroad commission, with the usual powers of issuing certificates of public convenience and necessity and of regulating tariffs. In Massachusetts, where passenger carriers only are regulated, a provision whereby all the municipalities on a bus route had to give consent before the commission could issue a certificate has been modified in the interests of the operators, and Kentucky repealed its old law and enacted new legislation creating a commissioner of motor transportation and placing all trucks and buses for hire under him, with the usual provisions regarding certificates.

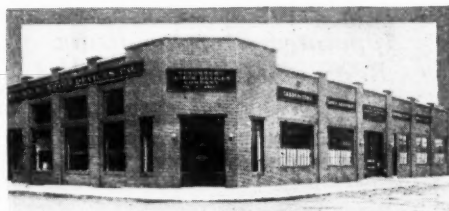
New Jersey amended its laws so that every bus operator is under the public service commission, except where the vehicles operated carry six passengers or less on a street or route on which there is not located a street railway or other bus line.

Mississippi enacted a certificate of title law. It formerly had none.

For Minimum Speed Limit

BALTIMORE, Md., Aug. 14.—That 19 miles an hour is a much more dangerous rate of speed for the motor vehicle than 25 or 30 miles is the opinion of John N. Mackell, chairman of the Maryland State Roads Commission. Mr. Mackell also is in favor of a minimum speed limit on the open road. According to Mr. Mackell, most of the accidents occur when the machines are moving at a speed of about 19 miles an hour. Greater speed, he points out, tends to eliminate the jockeying for position in line, caused by machines attempting to pass others that are moving only from 15 to 20 miles an hour.

New Stromberg Branch for Northwest



New northwest branch of Stromberg Motor Devices Co., at Minneapolis

MINNEAPOLIS, Aug. 14.—The new northwest branch of the Stromberg Motor Devices Co. has been opened here at 1529 Laurel Avenue. The branch is under the management of D. G. Chandler. The complete Stromberg family, including carburetor, shock absorber, windshield wiper and gasoline filter, will be represented.

Pierce Change in Wisconsin

MILWAUKEE, Aug. 14.—After a continuous representation of the Pierce-Arrow in the Milwaukee and Wisconsin territory for 21 years, the American Automobile Co., 423-431 Prospect Avenue, has relinquished the franchise. Announcement was made that Pierce-Arrow will be distributed in the territory by the Thinker Motor Co., a new interest in which the principals are Paul Thinker, Rockford, Ill., and Paul A. West, sales manager of the American Automobile Co., for the past three years. Mr. Thinker has been Pierce-Arrow dealer at Rockford for about two years, and has for years specialized in servicing high grade motor vehicles. The change in franchise also means a change in headquarters, the Thinker company having opened for business at 82-86 Farwell Avenue, Milwaukee. Its activities will cover not only Pierce-Arrow passenger cars, but also trucks and motorbuses.

Canadian Production in June Takes Slight Drop

Dominion Output Added to That of U. S. Makes Total of 405,326 Units

OTTAWA, Ont., Aug. 14.—Following the record output of May, Canada's production of automobiles dropped slightly to 21,751 units in June, 1926, according to official Government announcement at Ottawa on July 30. The June output in Canada included 6,610 open passenger cars, 11,175 closed models, 2,586 trucks, 1,354 chassis and 26 buses or taxicabs. The figure for June, 21,751, compares with 24,934 in May, 21,502, in April, 1926, and with 15,420 in June of last year.

During June, 1926, Canadian production of closed models dropped slightly in number to 11,175, from 12,327 in May, but was almost double the output of 5,653 closed models in June, 1925. Open car models at 6,610 in June, 1926, were 25 per cent below the 8,768 open cars produced in the preceding month and slightly below the 6,985 open models reported for June one year ago. Truck production in June, 1926, showed a drop of 15 per cent from May but was considerably ahead of the output of 1,706 in the corresponding month of last year.

With Canada's contribution of 21,751 units for June the total production in that month for the United States and Canada amounted to 405,326 of which 358,537 were cars and 46,789 trucks.

June output, therefore, was slightly above June of last year when 404,660 vehicles were turned out in the United States and Canada.

Production of cars and trucks in the United States and Canada for the first six months in 1926 is thus brought to 2,450,949 vehicles, or a trifle over 12 per cent greater than in the same period a year ago when 2,186,053 vehicles were produced.

Chrysler Dealers at Anniversary Banquet, San Francisco



One hundred Chrysler dealers of Northern California at the 20th anniversary banquet given by the H. O. Harrison Co., Chrysler distributor, San Francisco. Featuring the occasion was the initial showing of the new Chrysler "50"

TRADE ASSOCIATION ACTIVITIES

"BIG TOPS" TO HOUSE SHOW

Automotive Display Will Feature Greater St. Louis Exposition

ST. LOUIS, Mo., Aug. 16.—The Associated Automobile Service Companies of St. Louis will participate in the Greater St. Louis Exposition to be held Sept. 4-19 on the flying field in Forest Park, under the auspices of the St. Louis Chamber of Commerce.

Plans for the automobile show in connection with the exposition are going forward rapidly. The 16-day showing will probably be the longest ever attempted in the United States.

Thirty-two distributors of passenger cars, trucks and buses have so far engaged space in the automobile section which will be housed in three large tents, 100x300 feet each.

The showing will be the first for the 1927 models.

Chance for Jobbers' Salesmen

CHICAGO, Aug. 14.—In order to focus attention upon the service the jobber renders the retail automotive dealer the Merchandising Committee of the Automotive Equipment Association has decided to offer \$150 in prizes to the jobbers' salesmen who write the best letters on "Why should dealers buy from jobbers."

There will be a first prize of \$50, a second prize of \$25, a third prize of \$15, a fourth prize of \$10 and 10 prizes of \$5 each. Salesmen will send their letters to their own salesmanagers, who in turn will forward them to Arthur R. Mogge, merchandising director of the Automotive Equipment Association.

This contest was decided upon at the meeting of the merchandising committee last week, at which other merchandising plans that are not yet ready for announcement were discussed. Among other plans being considered is a bigger and better Christmas merchandising campaign.

Two Merchandising Sessions

CHICAGO, Aug. 14.—Merchandising meetings of the Automotive Equipment Association were held last night in Omaha and Thursday night in Des Moines, Iowa. Both meetings were largely attended by dealers. Henry Kirkland, special merchandising representative of the A. E. A., spoke at both meetings.

Mr. Kirkland also conducted a meeting Aug. 6 at Waterloo, Iowa, which was attended by 345 dealers. An address was made at this meeting by W. J. Keefe, a dealer.

At a meeting of the Service Managers' Group of the Chicago Automobile Trade Association Aug. 10 the A. E. A.'s Shop Profits film was shown by Arthur R. Mogge, merchandising director of the A. E. A.

Increase in Car Deliveries

SYRACUSE, N. Y., Aug. 14.—New car deliveries for the first six months of 1926 show an increase of 928 compared with the same period a year ago, according to figures announced by C. H. Hayes, secretary of the Syracuse Automobile Dealers Association.

So far this year local dealers have delivered 5300 passenger cars and 697

Appointed Merchandising Representative for A. E. A.



John J. Hall

CHICAGO, Aug. 13.—Appointment of John J. Hall as special merchandising representatives of the Automotive Equipment Association was announced today by Arthur R. Mogge, merchandising director of the association. This is the first appointment in connection with the seven additional merchandising representatives authorized by the association at its Montreal convention in June.

Mr. Hall will be assigned to Zone 2 which comprises metropolitan New York, eastern Pennsylvania, New Jersey, Maryland and the District of Columbia. He will take up his duties in that territory Sept. 1 and in the meantime will assist with merchandising meetings in Iowa.

Mr. Hall has had seven years in the automotive industry. He was a road service man for the Ford Motor Co. for four years, a Ford dealer in Iowa five years, eastern representative for the Anderson Co., calling on jobbers, for one year, and for the last year he has been service manager for the Philadelphia branch of the Ford Motor Co.

commercial cars. Last year at the same time 4372 passenger machines had been delivered.

This year April with 1692 deliveries was the biggest of the half years. Last year March with 1152 deliveries was greatest. The comparative figures on monthly deliveries follow: January, 1926, 119, 1925, 79; February, 1926, 281, 1925, 163; March, 1926, 992, 1925, 1152; April, 1926, 1692, 1925, 1047; May, 1926, 1409, 1925, 113; June, 1926, 807, 1925, 818.

HAD BEST USED CAR DISPLAY

St. Petersburg's "Better Buy" Week Cup Goes to Roberts-Bize

ST. PETERSBURG, Fla., Aug. 16.—At a meeting of the St. Petersburg Auto Dealers' association Mayor Pierce formally presented a silver cup to the Roberts-Bize Motor Company for having had the most attractive display of used cars during "Better Buy Week."

After luncheon Robert Smalley, president, read a letter from Sam Bloomberg, of Peninsular Motor corporation, tendering his resignation as treasurer of the organization, on account of moving his residence out of the city. The association accepted Mr. Bloomberg's resignation with regrets and authorized a letter of appreciation be sent him.

Pete Thomas was unanimously elected to succeed Mr. Bloomberg as treasurer.

N. A. F. C. Convention Dates

CHICAGO, Aug. 12.—The annual convention of the National Association of Finance Companies will be held Nov. 15 and 16 at the new Palmer House, Chicago, it was announced today by C. C. Hanch, general manager. A meeting of the directors will be held there the evening of Nov. 14. The program has not yet been completed. All members have been requested to suggest topics they would like to have discussed or acted upon.

New N. S. P. A. Members

DETROIT, Aug. 14.—Six manufacturers and three jobbers have been admitted to membership in the National Standard Parts Association by the board of directors of the N. S. P. A. They are as follows:

Manufacturers: Link-Belt Co., Indianapolis; Marlin-Rockwell Corp., Jamestown, N. Y.; National Motor Bearing Co., Inc., San Francisco; Piston Ring Co., Muskegon, Mich.; Powell Muffler Co., Utica, N. Y.; U. S. Axle Co., Pottstown, Pa.

Jobbers: Curtis & Christensen, Long Beach, Calif.; Samuel Barnett, Hoboken, N. J., and Terry Motor Parts, Albany, N. Y.

Cleveland Tradesmen Play

CLEVELAND, O., Aug. 14.—Cleveland's tradesmen—more than half a thousand strong—tossed business into discard for one day and went frolicking at the annual picnic staged by the Cleveland Automobile Manufacturers and Dealers Association at Geauga Lake Park.

Features of the outing were golf and baseball tournaments, swimming, boating and a wide variety of other sports.

W. A. Hall, of the Paige-Ohio Company, general chairman of the committee in charge, said it was by far the most successful picnic ever staged by the association.

Prepare for Fun in Toledo

TOLEDO, Aug. 14.—The annual picnic and outing of the Toledo Automotive Trades association is to be held at Toledo Yacht club and Bayview Park on Wednesday, Aug. 25. Local dealers and distributors who are members of the association will close their places of business for a half holiday on picnic day.

Driveaway Service Will Deliver Cars to Dealers

Special Truck Provided to Take Drivers Home at End of Trip

ST. LOUIS, Mo., Aug. 14.—The Nelson Motor Car Maintenance Co. has organized a driveway service to transport automobiles under their own power from factories to dealers.

A truck with longitudinal seats capable of carrying 32 passengers has been provided. It carries two 60 gallon cans of high grade lubricating oil and is driven by the captain of the driveway squad. It sets the pace for the caravan and carries home the drivers after they have delivered the cars to the dealers.

The men in the squad are dressed in white overalls, wear sun visored caps and numbered badges which identify them to strangers. A "test-ticket" is attached to the instrument board of each car driven away and the driver is required to record on this chart in spaces provided any imperfection in the car which he discovers on his journey. The test ticket is in the car when it is delivered to the dealer.

If the driveway is long, special tires are provided by the Nelson Company, which are replaced with new tires before the cars are delivered to buyers.

The Nelson Company carries full insurance on each car and members of the driveway squad are bonded. No tow bars are used, each car having its own driver.

The Chevrolet dealers of St. Louis already have availed themselves of the service and have arranged with the Nelson Co. to deliver all cars from the Chevrolet factory here to the dealers.

Under this system of driveways the Nelson Company asserts cars will be handled in better shape than ever before and at a lower cost to the dealer.

9,000,000 Cars in Vacation Jaunts

WASHINGTON, Aug. 14.—An estimated survey of the number of motorists making tours about the U. S. this season, has just been announced by the National Touring Board of the American Automobile Association. The association's figures, based on reports from 815 affiliated clubs, estimates 9,000,000 automobiles, carrying 36,000,000 people will take to the open road for their summer vacation. The board further estimates that the average tourist will spend \$10 per car per day, touring an average of 33 days, or a total expenditure of \$3,000,000,000, which is a half billion more than spent in 1925, the board figures.

Coming Motor Events

Automobile Shows

1927 NATIONAL SHOWS	
New York	Jan. 8-15
Chicago	Jan. 29-Feb. 5
Boston, Mass. March 5-12	
Mechanics Bldg.	
Boston, Mass.	Sept. 27-Oct. 2
Radio Exposition, Mechanics' Bldg.	
Chicago	Jan. 29-Feb. 5
Annual Salon, Hotel Drake	
Chicago	Nov. 8-13
Show and convention, Automotive Equipment Ass'n, Coliseum.	
Chicago	Nov. 15-19
Show and convention of the National Standard Parts Ass'n, Hotel Sherman.	
Chicago	Sept. 27-Oct. 2
National Radio Exposition.	
Dallas, Tex.	Oct. 9-24
Automobile Bldg.	
Los Angeles	Feb. 12-19
Annual Salon, Hotel Biltmore.	
New York	Nov. 24-Dec. 4
Annual Salon, Hotel Commodore.	
New York	Sept. 13-18
Madison Square Garden, Radio World's Fair.	

COMING FEATURE ISSUE OF CHILTON CLASS JOURNAL PUBLICATIONS

September 15—Commercial Car Journal—Annual Bus Issue
September 10—Operation & Maintenance—Annual Bus Issue
September 30—Automotive Industries—Annual Production Issue

Sell Star Products

NEW YORK, Aug. 14.—Durant Motors, Inc., announce appointment of the following automotive merchants to handle Star products:

F. E. Kirkham, Escondido, Cal.; Wells & Fair, La Mesa, Cal.; Solvang Motor Company, Solvang, Cal.; Termo Garage, Termo, Cal.; W. D. Rich, Cadsby, Alta.; Sam Colwill, Castor, Alta.; Scott Brothers, Empress, Alta.; Central Garage, Hanna, Alta.; Albert Brower & G. H. Shieman, Smoky Lake, Alta.; Parsons Brothers, Westlock, Alta.; J. A. Mathews, Parma, Idaho.

Miller Motor Company, Eureka, Kans.; Grant Motor Company, West Monroe, La.; Petrie & Wright, Myrtle Point, Ore.; Twin Peaks Auto Company, The Dalles, Ore.; Arni Motor Company, Seattle, Wash.; Sequim Auto Company, Sequim, Wash.; Hall Auto Company, Snohomish, Wash.; Star Sales Company, Toppenish, Wash.; Thomasson Garage, Anstead, W. Va.; Leo Kelnhofer, Minocqua, Wis.

Manages Wholesale

DENVER, Colo., Aug. 14.—Ward Lederer recently assumed the duties of manager of the wholesale department of the William H. Brown Motor Co., Peerless distributors for this territory. Mr. Lederer is an automobile salesman of many years experience, coming to Denver from New York City, where he has been connected with the Marmon sales organization.

Back in U. S. Field

NEW YORK, Aug. 14.—M. F. Davies, former manager of the Studebaker branch at Buenos Aires, has taken over the Studebaker dealership in Minneapolis, which is his home town.

San Francisco.....Aug. 21-28
Pacific Radio Exposition, Exposition Auditorium.

St. Louis.....Sept. 4-19
Industrial Exposition, Forest Park.

Races

Altoona, Pennsylvania.....Sept. 6
Atlantic City, N. J.....Sept. 25
Charlotte, N. C.....Aug. 23
Dallas, Texas.....Nov. 11
Los Angeles, Cal.....Nov. 25
Philadelphia.....Sept. 4-11

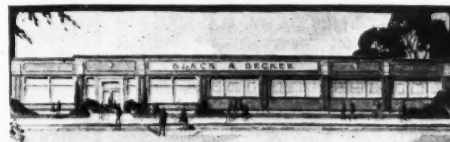
National Air Races

Salem, New Hampshire.....Oct. 12

Conventions

Automotive Equipment Association, Coliseum, Chicago.....Nov. 8-13
National Association of Finance Companies, Palmer House, Chicago.....Nov. 15-16
National Standard Parts Association, Hotel Sherman, Chicago.....Nov. 15-19
National Tire Dealers Association, Inc., Memphis, Tenn.....Nov. 16-18
Pennsylvania Automotive Association Elks' Home, Philadelphia.....Oct. 18-19
Society of Automotive Engineers, Transportation and Service Meeting, Boston, Mass.....Nov. 16-18

Black & Decker Co. Builds at Oakland



TOWSON, Md., Aug. 14.—Black & Decker Mfg. Co. announces that it has just completed erection of its new Pacific Coast home at Sixth Ave. and Tenth St., Oakland, Cal. It will be occupied Sept. 1.

This building will be used as a branch office, service station and distributing warehouse. It is of exceptional architectural beauty, of modern fire-proof construction and is 145x70 ft.

An interesting feature is a showroom where Black & Decker products will be set up in actual operation for demonstration to interested customers and particularly for the education of jobbers' salesmen.

Big Gain in Sales

CINCINNATI, Aug. 14.—Reports of sales made at a meeting of Hudson and Essex dealers who work out of Cincinnati territory under the direction of the C. Schlear Motor Car Company, indicated that a gain so far this year in sales of Hudsons and Essex cars is fully 66 per cent over last year. One hundred and twenty-seven attended the meeting.

Prices and Weights of Current Passenger Car Models

SHIP			SHIP			SHIP			SHIP		
WT. PASS.	BODY STYLE.	PRICE	WT. PASS.	BODY STYLE.	PRICE	WT. PASS.	BODY STYLE.	PRICE	WT. PASS.	BODY STYLE.	PRICE
McFARLAN "6"			OVERLAND			REO			STEARNS-KNIGHT (Continued)		
3700	2-p Roadster	\$2,650	2450	5-p Coach	950	3375	2-p Roadster	\$1,665	3770	2-p Roadster	\$2,750
3600	2-p Spec. Roadster	2,900	2470	2-p De Luxe Coupe	990	3182	5-p Sp. Touring	1,395	3775	4-p Touring	2,395
3600	5-p Touring	2,650	2620	5-p De Luxe Coach	1,050	3365	2-o Coupe	1,495	3785	5-p Touring	\$2,395
3600	7-p Touring	2,750	2690	5-p Sedan	1,025	3365	2-p Spec. Coupe	1,565	3895	7-p Touring	2,495
3850	5-p Brougham 4d.	\$3,180	2700	5-p De Luxe Sedan	1,125	3515	5-p Sedan 4d.	1,565	4035	5-p Sedan	2,750
3850	4-p Coupe	3,180			1,190	3565	5-p Spec. Sedan	1,745	4035	5-p Brougham	2,750
3850	4-p Sedan	3,180				REVERE			4020	4-p Coupe	2,850
3850	5-p Spec. Sedan	3,180				25" Sp. Roadster			4090	5-p Sport Sedan	3,050
3850	7-p Sedan	3,280				3900 2-p Speedster			4200	7-p Sedan	3,150
3850	5-p Sub. Sedan	3,380				3975 4-p Touring			STUDEBAKER		
3850	7-p Sub. Sedan	3,480				4050 5-p Sedan			Standard Six		
						4300 5-p Sedan			2700	3-p Du. Roadster	\$1,125
									2765	3-p Sport Roadster	1,295
									2830	5-p Du. Phaeton	1,145
									2875	3-p Country Club	1,295
									2945	5-p Coach	1,195
									3115	5-p Sedan	1,285
									3235	5-p Custom Sedan	1,385
									3115	5-p Sedan	1,395
									Special Six		
									3380	3-p Du. Roadster	\$1,395
									3500	4-p Sp. Roadster	1,595
									3495	5-p Du. Phaeton	1,445
									3470	5-p Coach	1,445
									3685	4-p Victoria	1,750
									3620	5-p Brougham	1,795
									3875	5-p Sedan	1,895
									Big Six		
									(120 in. W. B.)		
									3270	3-p Du. Roadster	\$1,495
									3400	4-p Sport Roadster	1,645
									3405	5-p Sport Phaeton	1,575
									3510	5-p Club Coupe	1,650
									3680	5-p Sedan	1,895
									3835	5-p Custom Bro'm	1,985
									(127 in. W. B.)		
									3630	7-p Du. Phaeton	\$1,775
									3910	5-p Brougham 4d.	2,095
									3945	7-p Sedan	2,145
									4080	7-p Roadster	2,225
									4050	5-p President	2,245
									STUTZ		
									"A-A"		
									(131 in. W. B.)		
									4164	2-p Speedster	\$2,995
									4175	4-p Speedster	2,995
									4390	5-p Brougham	2,995
									4416	5-p Sedan	2,995
									4273	4-p Vic. Coupe	2,995
									4286	2-p Coupe	2,995
									(145 in. W. B.)		
									3700	7-p Sedan	\$3,685
									3700	7-p Sedan Lim.	3,785
									VELIE		
									"66"		
									3030	4-p Sp. Roadster	\$1,495
									3025	5-p Club Phaeton	1,450
									2908	3-p Coupe	1,450
									3175	5-p Sedan	1,450
									3340	5-p Royal Sedan	1,785
									3350	5-p De Luxe Sedan	2,150
									WILLIS SAINT-CLAIRE		
									"B-68"		
									3500	7-p Phaeton	\$2,900
									3520	5-p Sedan	3,100
									3635	7-p Sedan	3,300
									"C-68"		
									3350	4-p Roadster	\$2,900
									3450	4-p Gray G. Trav.	2,900
									3600	5-p Sedan	3,200
									"D-68"		
									3550	4-p Gray G. Trav.	\$3,000
									3450	4-p Roadster	3,000
									3625	4-p Cab. Roadster	3,950
									3800	5-p Std. Sedan	3,450
									3825	5-p Sedan	3,550
									3820	5-p Brougham	4,050
									3710	5-p Spec. Sedan	3,450
									3875	7-p Enc. Limousine	3,650
									"W-6"		
									3650	7-p Phaeton	\$2,600
									3410	4-p Roadster	2,600
									3550	4-p Gray G. Trav.	2,600
									3680	5-p Sedan	2,800
									3765	5-p Vogue Sedan	2,900
									3775	7-p Sedan	3,000
									3835	7-p Enc. Limousine	3,085
									"T-6" (127 in. W. B.)		
									3675	6-p Traveler	\$2,700
									3750	4-p Roadster	2,700
									3750	4-p Cab. Roadster	3,650
									3900	5-p Sedan	3,150
									3970	7-p Sedan	3,250
									4080	7-p Limousine	3,750
									3920	5-p Brougham	3,750
									3810	5-p Spec. Sedan	3,150
									WILLIS-KNIGHT		
									"66"		
									3323	2-p Roadster	\$1,850
									3395	5-p Touring	1,750
									3566	7-p Touring	1,950
									3604	4-p Coupe	2,195
									3686	5-p Sedan	2,295
									3822	7-p Sedan	2,495
									"70"		
									2846	5-p Touring	\$1,295
									2853	2-p Coupe	1,395
									3050	5-p Sedan	1,395
									3050	5-p Sedan	1,495

Mechanical Specifications of Current Passenger Car Models

This list comprises cars distributed on a national basis

MAKE AND MODEL	Wheel Base (Inches)	Tire Size	Decimals-Balloons	Make and Model	Bore and Stroke	Rated H.P.	N.A.C.C. Position	Valve Arrange-ment	Camshaft Drive	Piston Material	No. Main Bear.	Crankshaft Vib in Dampener?	Oil System	Cooling System	Thermostat?	Radiators?	Carburetor	Air Cleaner?	ENGINE				ELECTRICAL SYSTEM		Gear Set—Make	Universals—Type and Make	REAR AXLE		BRAKES		Steering Gear—Make	Rear Springs—Type and Length	Chassis Lubrication—Type and Make	ABBREVIATIONS—NAMES OF MFRS. OF STOCK PARTS
																			Shaft?	Thermostat?	Make	Ignition System	Generator and Starter Make	Type and Make			Gear Ratio	Foot—Type and Location	Hand—Type and Location	4-Wheel Type				
Auburn 4-44	120	30x5.25	25	Lyc. CF 4-37x5.5	21.0	206	L	He. C.I.	He. C.I.	Al.	5	N	P.C.	Th.	N	N	Zen.	N	N	Remy	Remy	P.B&B.	W.G.	m-U-P.	1 1/2 Sal.	5.10	E-F	E-T	H	Ross	S-56 1/2	Oe-Ju.	A-K Atwater-Kent	
Auburn 6-66	121	30x5.25	25	Lyc. CF 4-37x5.5	25.3	224	L	He. C.I.	He. C.I.	Ch. C.I.	9	N	P.C.	Pu.	N	N	Sch.	N	N	Remy	Remy	P.Long.	W.G.	m-U-P.	1 1/2 Col.	5.10	B-F	E-T	M	Ross	S-57	Pr-Dot	A-L Auto-Lite	
Auburn 8-88	129	30x5.77	33.8	Lyc. 4-37x5.5	33.8	299	T	He. C.I.	He. C.I.	Ch. C.I.	9	N	P.C.	Pu.	N	N	Sch.	N	N	Remy	Remy	P.Long.	W.G.	m-U-P.	1 1/2 Col.	5.10	B-F	E-T	M	Ross	S-57	Pr-Dot	Ada Adams	
Buick 115	146	32x6.20	20	Own. Std. 6-31x5.5	23.4	207	I	He. C.I.	He. C.I.	Ch. C.I.	4	Y	P.C.	Pu.	N	N	Mar.	Y	Y	Delco	Delco	D.Own.	Own.	m-Own.	3/4 Own.	4.90	E-F	E-T	M	Jac.	V-48	Pr-Ze.	Al-Alumet	
Buick 120 & 128	120-128	33x6.00	00	Own. Mast. 6-31x5.5	29.4	274	I	He. C.I.	He. C.I.	Ch. C.I.	4	Y	P.C.	Pu.	N	N	Mar.	Y	Y	Delco	Delco	D.Own.	Own.	m-Own.	3/4 Own.	4.70	E-F	E-T	M	Jac.	V-47 1/2	Pr-Ze.	Al-Alumet	
Cadillac 314	132-138	33x6.75	75	Own. 6-31x5.5	31.2	314	T	Ch. C.I.	Ch. C.I.	Ch. C.I.	3	N	P.C.	Pu.	N	N	Own.	N	N	Delco	Delco	D.Own.	Own.	m-Spi.	1 1/2 Col.	4.45	E-F	E-T	M	Jac.	S-60	Pr-Al.	B&B Borg & Beck	
Case 347	132	34x7.30	30	Con. 6-33x4.5	27.3	331	L	He. C.I.	He. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Own.	N	N	Delco	Delco	D.Own.	Own.	m-Spi.	1 1/2 Col.	4.45	E-F	E-T	M	Ross	S-57	Pr-Sa.	Bal-Ball & Ball	
Case JIC	122	32x6.20	20	Con. 8-33x4.5	33.8	331	L	He. C.I.	He. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-54	Pr-Sa.	Bal-Ball & Ball	
Case Big 6	124	33x6.00	00	Own. Std. 6-31x5.5	29.4	289	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.	m-Own.	3/4 Own.	4.45	E-F	E-T	M	Own.	S-59 1/2	Pr-Sa.	Bal-Ball & Ball	
Chandler 109	109	30x6.00	00	Own. Std. 6-31x5.5	22.5	191	L	Ch. C.I.	Ch. C.I.	Ch. C.I.	4	N	P.C.	Pu.	N	N	Sch.	N	N	Bosch	Bosch	P.B&B.	W.G.											

In explanation..

PRACTICALLY all automobile bodies have an outside covering of steel. But not all such bodies are the same underneath. There are two different types of interior construction.

One type employs a wooden frame. The other is constructed *entirely* of steel—a steel frame and a steel covering welded into a single unit.

Due to this outward resemblance between the two types of bodies, thousands of motorists mistakenly believe, when they are buying an automobile, that they are getting a body built *entirely* of steel. And they confidently rely on it to give them the safety and protection which is possible only with all-steel construction.

If, when you buy your next car, you wish the advantages which all-steel construction offers, make sure that the body of the car you buy has a *frame* of steel as well as a surface of steel.

EDWARD G. BUDD MANUFACTURING CO.
PHILADELPHIA
DETROIT



Originators of the Budd All-Steel Automobile Body

T—T head
Th—Thermo-syphon
V—Cantilever
Var—Varies
V—Shave valve
Y—Yes

PS—Splash with pressure
Pu—Pump
Q—Quarter elliptic
R—Rectifier
S—Shave
S—Shave

O—Special type (rear springs)
Oc—Oil cups
OG—Oil and Grease Cups
OW—Oil cups with wick feed
Pr—Pressure gun

I—In head
Int—Integral four wheels
I-F—Internal rear wheels
I-R—Internal rear wheels
K—Close-quarter elliptic

E—Full elliptic
E-F—External four wheels
E-R—External rear wheels
E-T—External transmission
F—Filter

3/4—Three-quarter floating
A—Air
Al—Aluminum
B—Semi-steel
B-F—Both internal and external, four wheels

Mechanical Specifications of Current Passenger Car Models—Continued

(This list comprises cars distributed on a national basis)

(From page 46)

(This list comprises cars distributed on a national basis)

[illegible]



MOTOR CARS

The Flint selling franchise is available in open territories to progressive merchants whose records will match the opportunity presented by the future market for Flint cars.

The Flint offers a complete line of cars—three chassis sizes—ranging in price from \$1085 to \$2395; a profit making discount in keeping with the investment required; a car of superior merit and unusual good will of owner-drivers;—

—and something new which will be of very great interest to such dealers as may apply—in confidence—for details to

FLINT MOTOR COMPANY

Elizabeth, New Jersey

General Sales Department • 1819 Broadway
Manufacturers Trust Company Building

NEW YORK

FLINT JUNIOR • FLINT SIXTY • FLINT EIGHTY

\$1085 to \$2395

f. o. b.



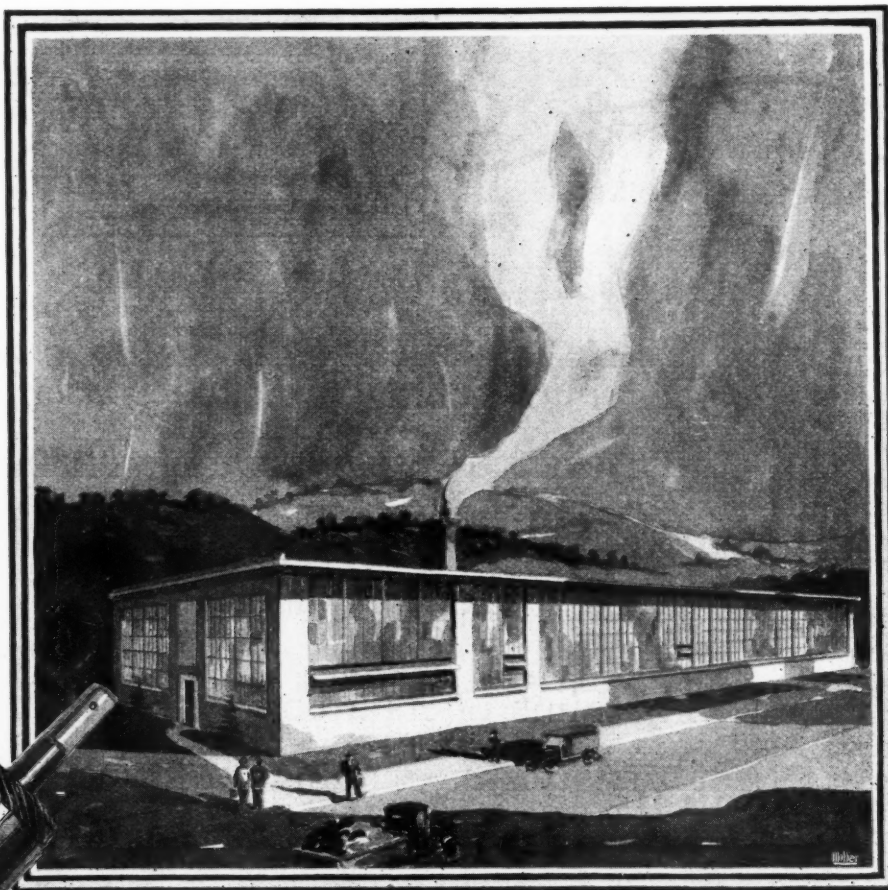
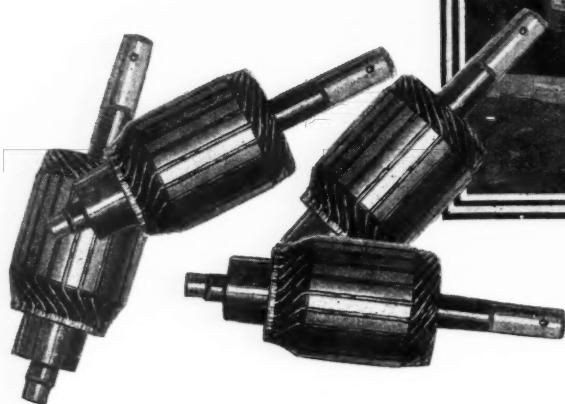
V—Canvasser
V—Sales
V—Sleeve valve
Y—Yes
Pu—Pump
Q—Quarter elliptic
R—Rectifier
S—Separate
S—Separate

O—Oil cups
OG—Oil and Grease Cups
OW—Oil cups with wick feed
P—Single plate
P—Pressure gun

Int—Integral
I—Internal four wheels
I—Internal rear wheels
I—Three-quarter elliptic
K—Cone

Ext—External four wheels
E—External rear wheels
E—External transmission
F—Fabric
F—Filter
F—Full floating

Al—Aluminum
B—Bumpers
B—Bumpers internal and external, four wheels
BO—Bevel Gear Overhead shaft



Growth!

America's Repairmen Using More and More Fredericks Rewinds

THE huge Fredericks plant at Lock Haven grew from a one-room factory. Then Fredericks served a vicinity. . . . Now the entire continent uses *Fredericks Rewinds*. Repairmen everywhere use them with confidence. And get the greater profit they pay. . . .

If you have never used a *Fredericks Rewind* you may not know this. Unlike ordinary rewind armatures, *Fredericks Rewinds* are made with the care

and skill and same high grade materials as new armatures. Backed by the same guarantee. Give the same service.

Ship the next burn-out you get to us. Or carry a small stock of *Fredericks Rewinds*. For complete details and prices, send the convenient coupon now.

FREDERICKS
Rewinds

The H. M. Fredericks Co.,
Lock Haven, Pa.

You may send me complete information on
Fredericks Rewinds.

Name..... Company.....

Address.....



MODEL "FC-BC"

A cleverly designed locking chain for the lighter cars. The single bar shackle is made to go through the hole in carrier bracket on the 1926 Ford. Lock is of malleable iron; chain is 1/4-in., case-hardened. Neatly covered. Model FC for Ford, Chevrolet, Dodge, etc., to list at \$3.50. Model BC same as above, but with 11/32-in. heavy coil chain, 21 in. to 48 in. in length, lists at from \$4.50 to \$6.75.



Model "FC" as Installed on Ford Carrier

A new lock made expressly for Fords and all Pines Locks have the same thief-proof quality of this model

THE Pines line of locks is built to meet this belief of ours—that the motoring public would welcome an honest-to-goodness lock—and one that besides being fully protective, would be good-looking, also.

Over 20,000 locks already in use in Chicago alone tell the story. The public wants a good lock—and you can profit because of that fact. Your customer will thank you for selling him a lock that is something more than just a toy.

The Pines line is complete. There is a model to fit practically every make and model of car.

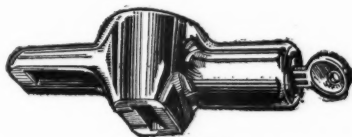
Prices range from \$3.50 to \$6.50, with many of the most popular models at \$5.

Pines policies protect you. You know us as makers of the famous Pines Automatic Winterfront—a firm you can rely on in every way.

Send for sample

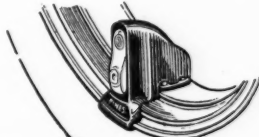
Write us what make of car you handle and we'll see that you get a sample lock. If you're interested in the whole line, we'll arrange to show you that. Fill in and mail the handy coupon. No obligation.

Pines Locks are made by the makers of the famous Pines Automatic Winterfront



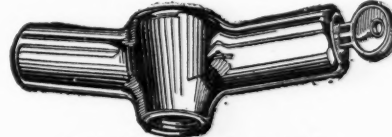
Patent Pending
MODEL "E"

Steel Wheel Lock for carrier having flat angle piece with hole for padlock.



Patented June 8, 1926
MODEL "R"

A massive unbreakable base surrounds and protects rim-wedge of this new Pines model.



Pat'd July 17, 1923. Others Pending
MODEL "D"

A threaded, hardened sleeve in this Spare Wheel Lock screws up tightly on carrier stud.

FILL IN, CLIP AND MAIL THIS TODAY

BOX K-401, LOCK DEPT., PINES WINTERFRONT CO., 408 N. SACRAMENTO BLVD., CHICAGO

Please show us ☐ Your entire line of locks.

(Check which) ☐ Send sample of one of your locks to fit

..... Car

Model..... No obligation in either case.

☐ Jobber ☐ Dealer ☐ Car Distributor. (Please check which)

Name.....

Address.....

City..... State.....

KISSEL

CUSTOM  BUILT

New KISSEL Line Warmly Received Everywhere

Cushioned-in-rubber—that's the big news in the automobile industry for 1927! Kissel, the first American-built car to have all major units—motor, springs and chassis—completely cushioned-in-rubber, has attracted the attention of the whole motoring world.

Motors by Kissel

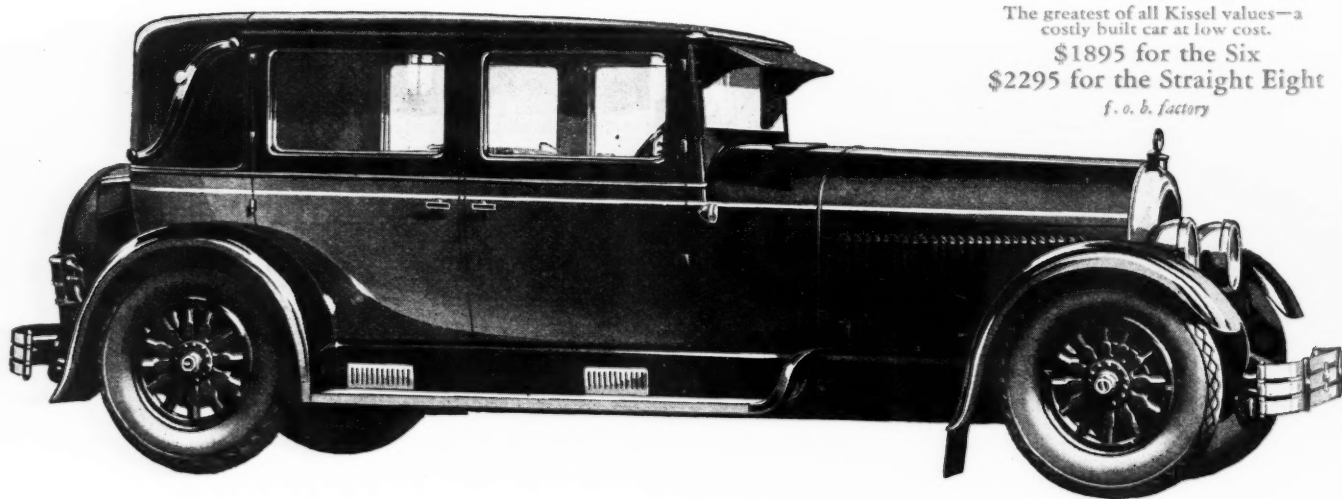
The New 4-Door Sedan

The greatest of all Kissel values—a costly built car at low cost.

\$1895 for the Six

\$2295 for the Straight Eight

f. o. b. factory



THE KISSEL MOTOR CAR COMPANY, HARTFORD, WIS.

CUSHIONED- IN-RUBBER

Moreover, the other Kissel features, such as new lower chassis, new wheelbase, new flat fenders, new color combinations and straight line drive, have placed this car as the most improved of all the latest models announced this summer.

Because this new line of cars has all units sunk in rubber, there is practically no vibration. These cars give a more delightful quality of riding comfort than has ever before been experienced. Performance of rare quietness and buoyant smoothness is the result.

Kissel dealers everywhere are reporting a tremendous increase in sales. New Kissel dealers are being added in every part of the country. If you are interested in obtaining the Kissel franchise for your locality, wire immediately and we will send you full description of the new line and the new Kissel dealer program.

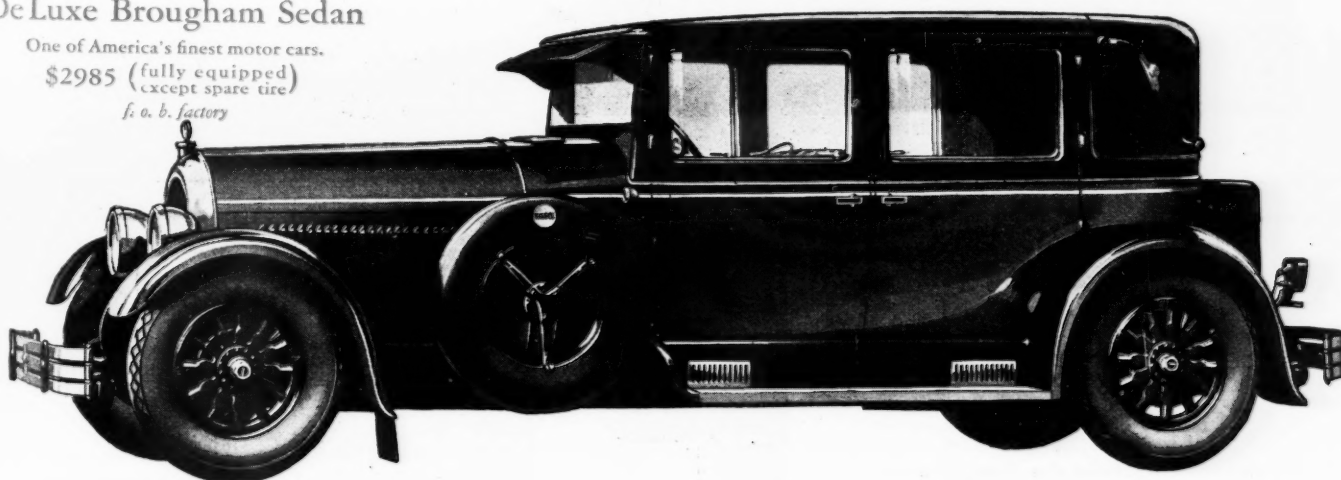
Bodies by Kissel

The Straight Eight DeLuxe Brougham Sedan

One of America's finest motor cars.

\$2985 (fully equipped)

f. o. b. factory



THE KISSEL MOTOR CAR COMPANY, HARTFORD, WIS.

Let the AERMORE sell Itself!



PUT the Aermore demonstrator on your counter. It's one of the best attention-getters ever offered to the dealer.

A big percentage of the people coming into your store will want to see how the Aermore demonstrator operates. And once their interest is aroused, the beginning of a sale is well under way.

One stroke of the plunger sounds the beautiful, far-reaching tones of the Aermore—the most effective signal ever developed.

Everyone admires this signal because it is totally different from all the rest. It is a pleasant signal, but one that is always heard and never ignored. It "Warns without startling".

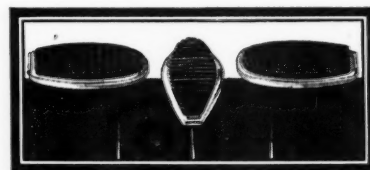
Hundreds of dealers know that the Aermore sells itself. Every customer gives his own demonstration. Rapid turnover and quick profits are assured if you will give the Aermore demonstrator an opportunity to work for you. It occupies very little space but it certainly is a real salesman. The demonstrator is supplied free when you stock Aermores. Ask your jobber's salesman for full details.

Note These Popular Prices

Five sizes; price complete with Valve and Hand Control.

Ford Special	\$ 7.00
No. 1 for small cars	10.00
No. 0 for medium cars	12.00
No. 00 for large cars	14.00
No. 000 Extra deep tone Motor Bus Special	16.00

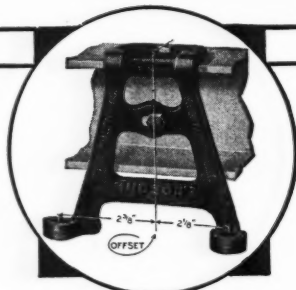
(Specify make and model of car when ordering)



More Popular Than Ever Fulton (Perfection) Pedal Pads for All Cars

You will find these pads among the fastest moving items in your stock. They are neat and practical. Assure greater comfort and safety. Thick, live rubber, firmly held in a nickel frame. Attached in a few seconds.

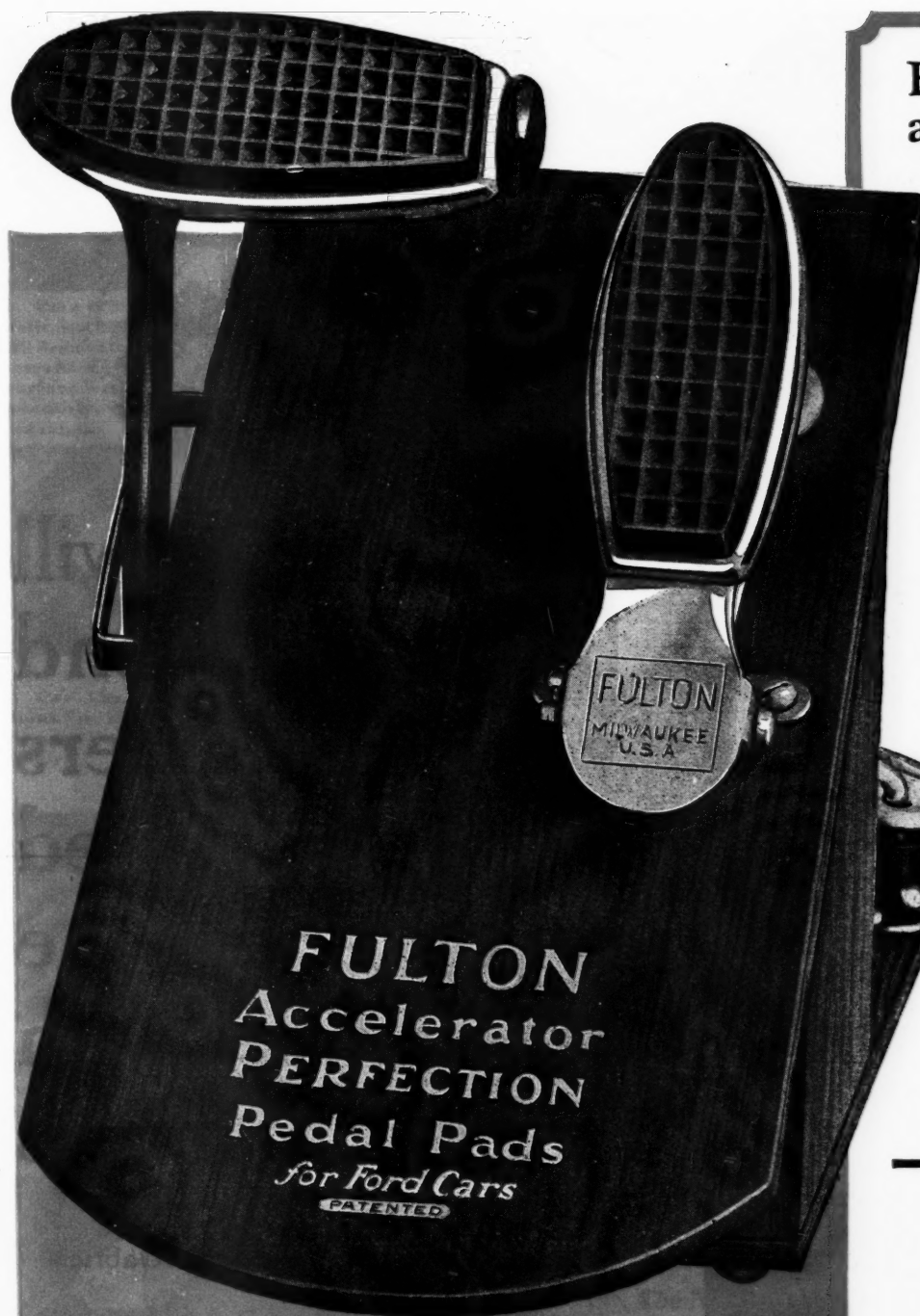
For Fords—Type D-26 (fit 1926 models) set of 3, \$1.00.
Type DX (for Fords previous to 1926) set of 3, \$1.00.
For other cars, set of 2, \$1.00.



Hudson's Model B Crank Case Repair Arm—fits either side of any Ford crank case without drilling, filing, or forcing. Holds motor in original alignment. Quickly and easily installed. Better satisfied customers—more sales. \$1.00 each.

THE FULTON COMPANY, 732-75th Ave., MILWAUKEE, WIS.

FULTON



Fulton Accelerator for Fords

One of the fastest selling accessories on the market today

Ask any dealer who handles the new-improved Fulton Accelerator. He'll tell you he never had an accessory in stock that met with a more widespread, popular demand.

Simple design and sturdy construction. Direct connection with carburetor. The big, comfortable footrest has a genuine Fulton Perfection Pedal Pad of thick, live rubber. You can make entire installation in 15 minutes.

Get This Free Demonstrator

It is a silent salesman that never fails to produce business. Gives an actual working demonstration. Comes to you equipped with a new improved Fulton Accelerator and a Type D-26 Fulton (Perfection) Pedal Pad. Stand, fully equipped, free to you with a reasonable order. Ask your jobber's salesman for full details.

The low price of \$1.00 moves them fast!



Fulton Accelerator Pedal for all Cars

Makes any accelerator smooth, easy. Fine looking. Nickered frame. Big rubber covered pedal. Fits any car. Easily installed. Noal-**\$1.00** terations. Price

THE FULTON COMPANY, 732-75th Ave., MILWAUKEE, WIS.

TON



Fulton Copperhead Socket Wrench No. 4100—Price \$3.50

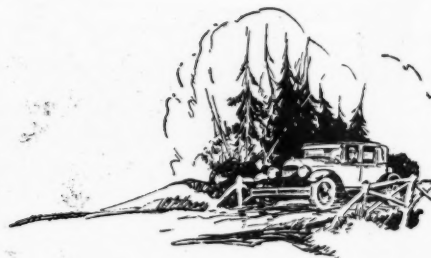
An indispensable tool for garages, tire shops, service stations. The 4 sockets take all ordinary size rim nuts. Leverage can be instantly increased 300%, simply by throwing over the handle. High-carbon steel socket head turns easily. Socket head is copper plated.



How Gabriels Work

When your car hits a bump, the car springs compress, and the slack in the Gabriel belt is taken up by expansion of the coil spring "B". Then as the rebound of the car spring commences, the $4\frac{1}{2}$ coils "A" (giving up to 180 sq. ins. of friction surface) immediately tighten and begin to create friction on the brass band between them. This resistance increases gradually—returning the car springs to their normal position without a jerk or abrupt stop. The result is that those in the car stay on the seats and are not bounced or jolted from them.

The GABRIEL SNUBBER MFG. CO.
1415 E. 40th St., Cleveland, O.
Toronto, Canada



**Your profits will
be greater and
your customers
better satisfied
if you equip the
cars you sell with
Gabriel Snubbers**

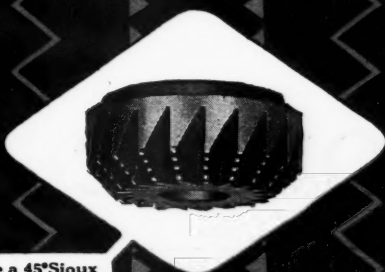
37 car manufacturers equip with Gabriels

25 drill their car frames for Gabriels

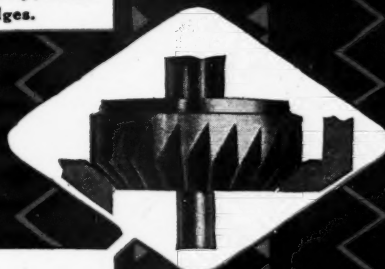
3100 Gabriel stations sell Gabriel Snubbers
on a 30-day money-back guarantee

GABRIEL SNUBBERS

Gabriel—and Only Gabriel—Is a Snubber



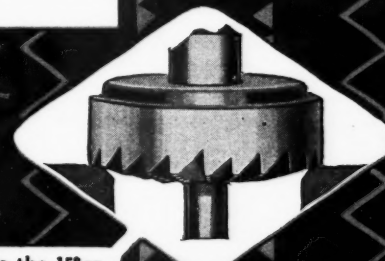
1 Use a 45° Sioux Valve Seat **ROUGHING** Reamer to remove hard glazed surface easily, smoothly, without ridges.



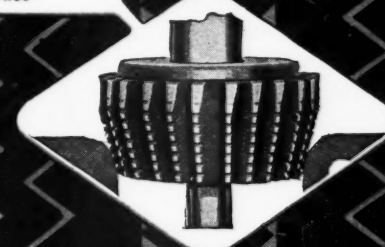
2. Use the 45° Sioux Finishing Reamer very lightly.



3. Lap the valve lightly with fine compound to get an impression of valve seat on valve face.



4. Use the 15° or 75° Sioux Nicked Tooth Valve Seat Reamer—or both—to bring valve seat to center of valve face



An Old Problem Happily Solved

IN reaming valve seats mechanics often find difficulty in centering the reamer over an uneven guide hole. Use oversize pilot stem and recut valve seat to get it into proper alignment with the guide hole. The seat is then usually larger on one side than on the other. Use the 15° or 75° reamer, or both, to bring seat back to its original condition.

For the most accurate job, proceed as indicated in the illustrations to the left.

The NEW Nicked Tooth Feature of Sioux 15° and 75° Valve Seat reamers lessens resistance of cutting points, eases up the work, produces a better finish, lengthens life of reamer and absolutely eliminates chattering!

Order 15° about same size as valve head and 75°, in most cases, about 1/8" smaller.

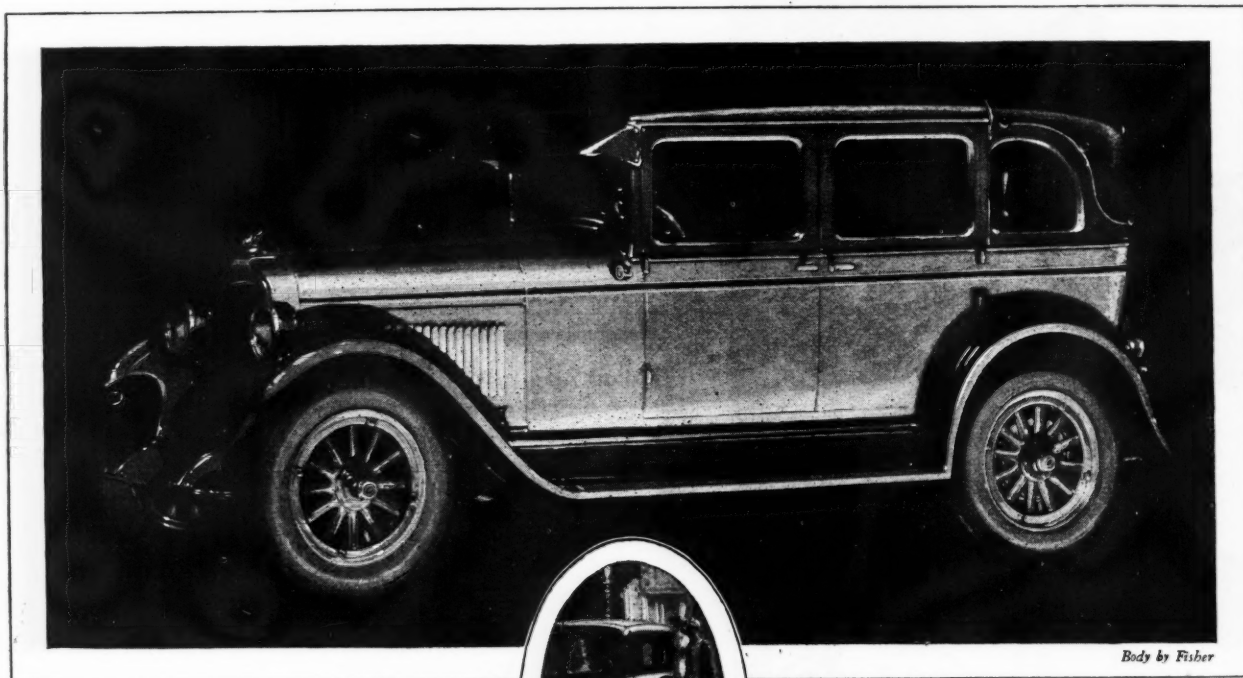
Sioux Pilot Stems can be obtained in .001, .002, .003 and .004 oversize or undersize on any size at same prices. To assure a perfect job and prevent reamer from wobbling or traveling, use a stem that fits snugly in guide hole.

Your Jobber Sells Them

ALBERTSON & CO.

SIoux CITY, IA.

Still Another Source of



Body by Fisher

OAKLAND
presents the

\$895

PONTIAC SIX *Landau Sedan*

A masterly combination of style, stamina and thrift . . . An ultra-smart Body by Fisher, finished in Sedge Green Duco . . . the spectacular power, speed and endurance that have established the Pontiac Six as the outstanding triumph of automotive history . . . And a price that could only be achieved by an organization enjoying the advan-

tages of General Motors' gigantic purchasing power . . . In short, Oakland's answer to the demand for a low-cost enclosed six, combining the utmost in distinguished appearance and appointments with that quality construction which is now recognized as the outstanding characteristic of the Pontiac Six.

Pontiac Six Sedan or Coupe, \$825. Oakland Six, companion to Pontiac Six, \$1025 to \$1295. All prices at factory. Easy to pay on the General Motors Time-Payment Plan.

OAKLAND MOTOR CAR COMPANY, PONTIAC, MICHIGAN



The Pontiac Six Landau Sedan is finished in Sedge Green Duco on body, hood and wheels, contrasting with satin black superstructure and fenders; French gray striping; rear quarter trimmed in dull leather and embellished with landau irons . . . **Upholstery:** Fine texture wool velours of superior wearing qualities . . . **Equipment items** include nickel-plated radiator, Indian head radiator cap; VV windshield with automatic cleaner; rear vision mirror, dome light, sun visor, roller shades on rear windows, robe rail, foot rail, high speed window regulators and invisible door checks.

Profit to Holders of the Double-Profit Franchise

With body types ranging in price from \$825 to \$1295, Oakland-Pontiac dealers, for months, have been selling to the largest quality car market in the world and scoring a success that is electrifying the automotive industry.

Now Oakland announces a new body type—the Pontiac Six Landau Sedan, a four-door enclosed car, with Body by Fisher, that is destined to meet with immediate favor and to prove another source of profit to holders of the Double-Profit Franchise.

This addition to the Oakland-Pontiac line has been made because the Oakland Motor Car Company is determined to spare no effort in making the Oakland-Pontiac Double-Profit Franchise the most valuable, profitable and desirable the industry affords.

It represents merely another new factor for you to consider when contemplating the selection of a franchise that carries greater assurance of profit and permanence than the one you now have.

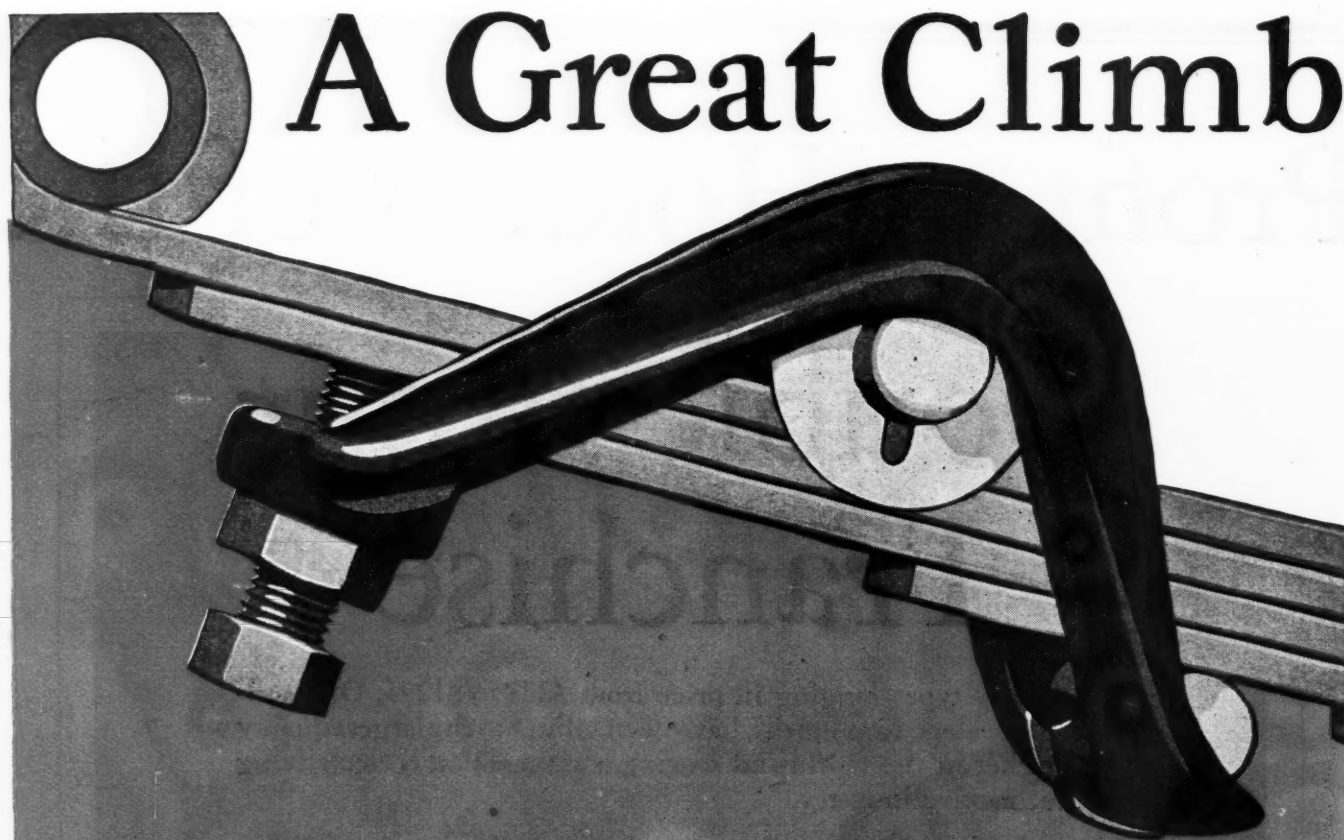
In short, it strengthens the appeal of the liberal discounts, equitable dealings, generous advertising and merchandising cooperation that have impelled so many aggressive dealers to come beneath the Oakland-Pontiac banner and share a success that takes front rank among present day feats in successful motor car merchandising.

You can get all the facts about the Double-Profit Franchise and its availability in your territory, by writing or wiring for a factory representative. Address Department C.

OAKLAND MOTOR CAR COMPANY, PONTIAC, MICHIGAN

OAKLAND-PONTIAC

PRODUCTS OF *Sixes* GENERAL MOTORS



HEXDEES

for Spring Control

NO wonder so many motorists are buying Hexdees. When one owner buys double riding comfort at half the cost, he's bound to tell his friends.

READ what Hexdees owners are saying: "They certainly make a world of difference in the riding of my Buick. They eliminate by far the greater percentage of up and down motion on the rough roads."

"Hexdees were installed on my car, a Ford, in a few minutes. Then I hunted up the worst stretch of pavement I could find. The result was a big surprise. I doubt if I could drive

8 miles an hour over this rough street without Hexdees, but, with them, I took it a clip of 20 miles an hour without discomfort. Hexdees are worth twice the price."

Comments like these are coming from every part of the country—"the best shock absorbing devices we have ever used." "Hexdees are the simplest type of spring control to be found. Their maintenance is nothing, and there is nothing that can become out of order."

ISN'T this the kind of customer enthusiasm you want for the products you offer for sale?

to Volume Profits

*Selling Double Riding Comfort
at HALF Cost*



\$8⁷⁵

\$14²⁵

for Fords for Other Cars
Slightly higher prices Denver and West

WHEN we can offer double riding comfort at half cost, when we can install these new shock absorbing devices in 30 minutes and give the motorist road-smoothing equipment that never needs readjustment, never requires lubrication and never wears out, we've surely got something that will sell in real volume.—

THAT'S what Hexdees dealers everywhere are saying. They've tried Hexdees on their own cars. They've experienced the favorable reaction of satisfied customers. They've had the thrill of Hexdees profits.

READ what Frank E. Snow of Lawrence, Mass., says: "On March 24th, we received our first order of Hexdees. We have installed them on Essex, Oldsmobile, Oakland, Yellow Cab, Ajax, Jewett, Buick, Flint, Rickenbacker and Packard Cars, and every owner is now boosting for Hexdees. We are looking for a bright future for these new devices."

NEVER before have dealers had such an opportunity for easy, sure sales. A few distributing points are still open.

Write for details.

DETROIT STEEL PRODUCTS COMPANY • 2286 East Grand Boulevard • Detroit, Mich.

The MAYO

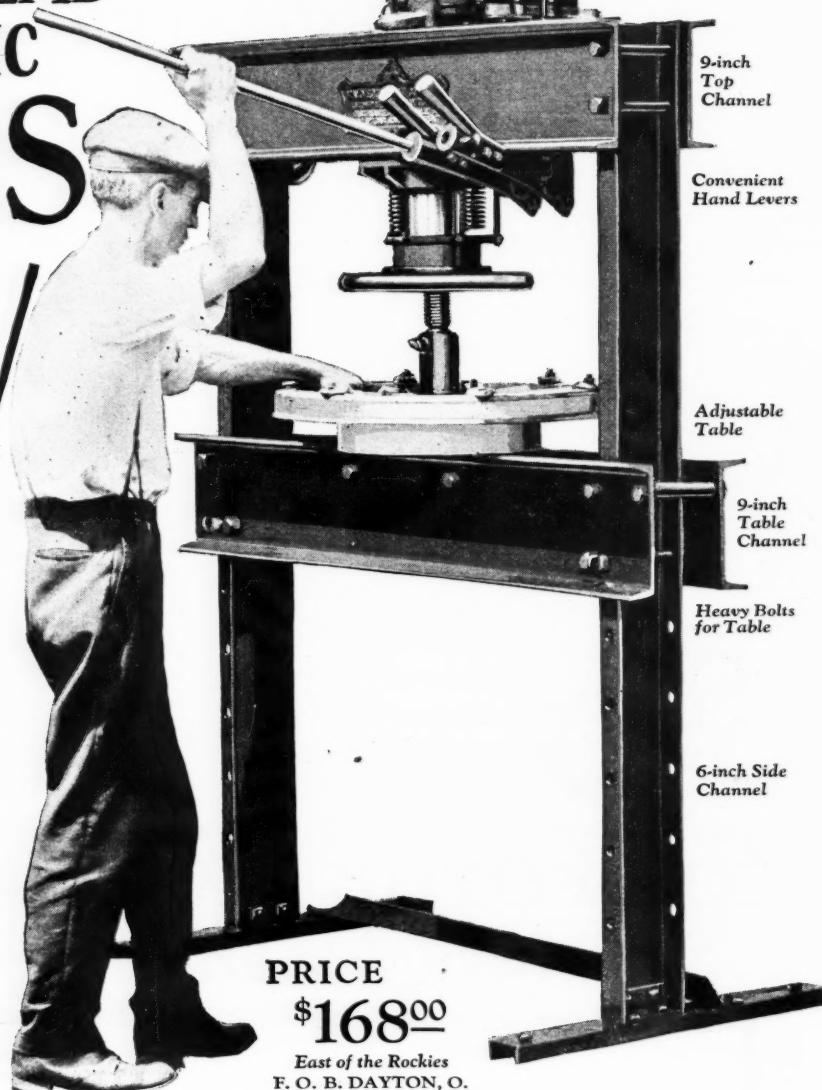
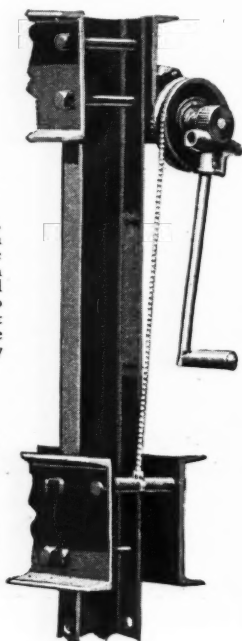
SLIDING HEAD HYDRAULIC PRESS

A new One

Table Lifting Attachment

This attachment, furnished at extra cost, is a double ratchet device which lifts the working bed easily and quickly to any convenient height, holding the bed level in every position.

PRICE
\$25⁰⁰



Movable Head
Sidewise Width of Press

9-inch
Top
Channel

Convenient
Hand Levers

Adjustable
Table

9-inch
Table
Channel

Heavy Bolts
for Table

6-inch Side
Channel

PRICE
\$168⁰⁰

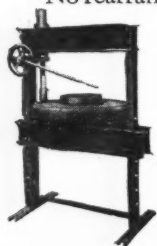
East of the Rockies
F. O. B. DAYTON, O.

FORTY TONS OF PRESSURE in one man's hand—forty tons of mammoth strength controlled by a finger touch—that's the new MAYO Hydraulic Press! This giant of the MAYO crew places at the service of every shop ample power for the toughest jobs. And the MAYO Hydraulic Press gives you not only power but the ability to use the power where you want it.

Note these exclusive MAYO features. The sliding head permits you to work direct on any part of the wide table. No rearranging necessary here—simply slide'er over and

give'er the gun. The handy movable table, designed for simplicity and strength, is adjustable in a jiffy to the most convenient working height. The full-cut MAYO screw is not weakened by slots: it'll take a sledge blow on the bed without a quiver. The hand levers are in the right place—out of the way, yet easy to reach.

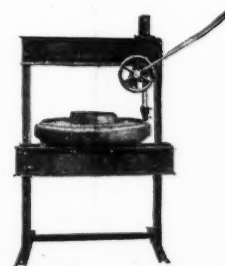
The MAYO Hydraulic Press will bring you more work, save you time and effort, and repay you many times over for its moderate price. Ask your Jobber to demonstrate, or write to us for full information.



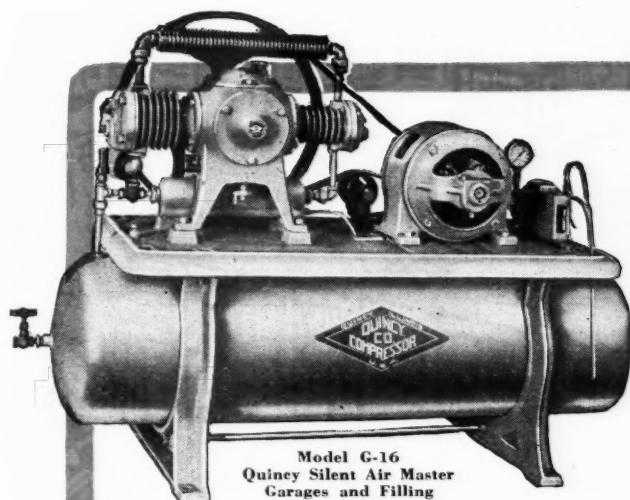
MAYO 40 TON
HAND PRESS
\$100
Head at left

MAYO GARAGE
EQUIPMENT

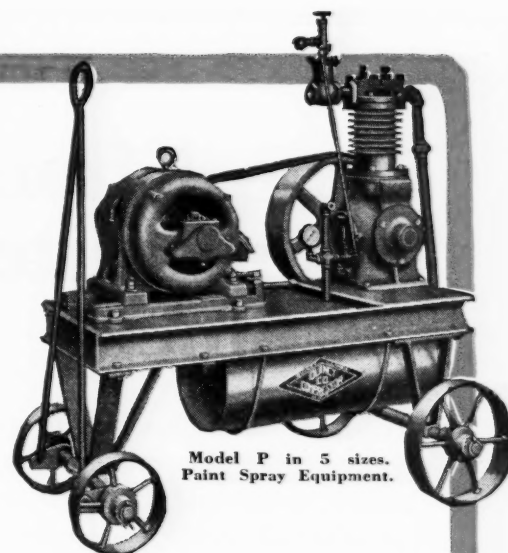
MAYO 40 TON
HAND PRESS
\$100
Head at right



The complete MAYO line is nationally distributed by DAVID LUPTON'S SONS CO., Manufacturers of LAPS
Plant and Main Office: PHILADELPHIA • Sales Office: 2631 Woodward Ave., DETROIT



Model G-16
Quincy Silent Air Master
Garages and Filling
Stations.



Model P in 5 sizes.
Paint Spray Equipment.

A Quincy For Every Job

If you're ill you call a physician. An architect is consulted about the plans for your new home, a lawyer for legal advice. Why not apply the same principle to the selection of your air compressor? Buy from compressed air specialists.

Do you need a compressor for pneumatic tool service, sand blasting, or other heavy duty work? Quincy water-cooled units are built to do the job at least cost.

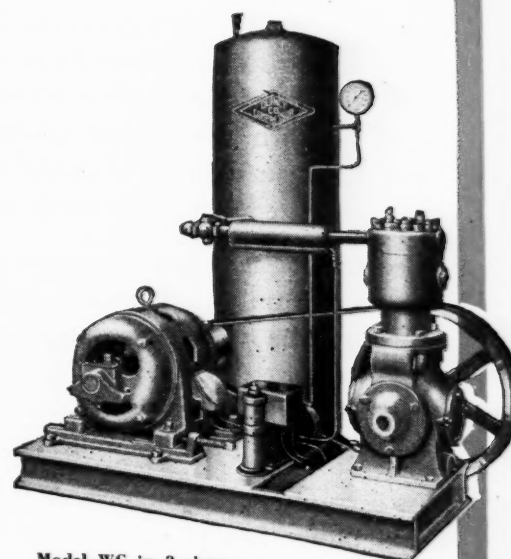
For service stations or garages, Quincy single or two-stage compressors come in a size to fit your station and a price that doesn't strain your budget. Maybe you plan to start an auto laundry or install paint spraying service. If so, you'll find in the Quincy line the kind and size compressor to serve your purpose and save you money.

The increasing demand caused by Quincy single and two stage air-cooled compressors made it necessary for us to create the new units shown here. All were designed by Quincy engineers and constructed of material worthy of the Quincy label. The same long life and service of all Quincy units is built into these compressors, as well.

This is part of the story. If you'll sign and mail the coupon, complete information including technical description, adaptability, size, price, terms, etc., will be mailed you without charge. You are not obliged to buy—just read.



Quincy
Air Tower



Model WC in 3 sizes.
Especially Suited for Auto Laundries.

QUINCY COMPRESSOR CO.

219 Main St., Quincy, Ill.

Please place my name on your mailing list to receive the complete story of Quincy Compressors.

Name.....

Address

City.....State.....

SEND THIS COUPON

Quincy Compressor Co., Quincy, Ill.

Formerly Wall Pump and Compressor Co.

K303

QUINCY COMPRESSOR CO.

Quincy



Illinois

Choose from an Unlimited Stock

"Turnover" has become a word of almost magic significance, and judging from the talk about it, one would think it a recent discovery. Yet after all it depends upon certain fundamentals, as old as the art of selling itself.

It is more true now than ever that good selling is linked up with good buying. The alert merchandise man must have comprehensive and reliable buying information; he must have contact with the widest possible sources of merchandise if he is to make sure of getting what he needs when he needs it.

Because of this need, a market place of the trade, an unlimited stock, has been created through the advertising pages of this A. B. P. publication. The market place is brought to the buyer. Comparisons are made available which guide intelligent decision.

As a condition of membership in the A. B. P. this paper has pledged itself "to decline any advertisement which has a tendency to mislead or which does not conform to business integrity" and it is maintaining this protection for the buyer.

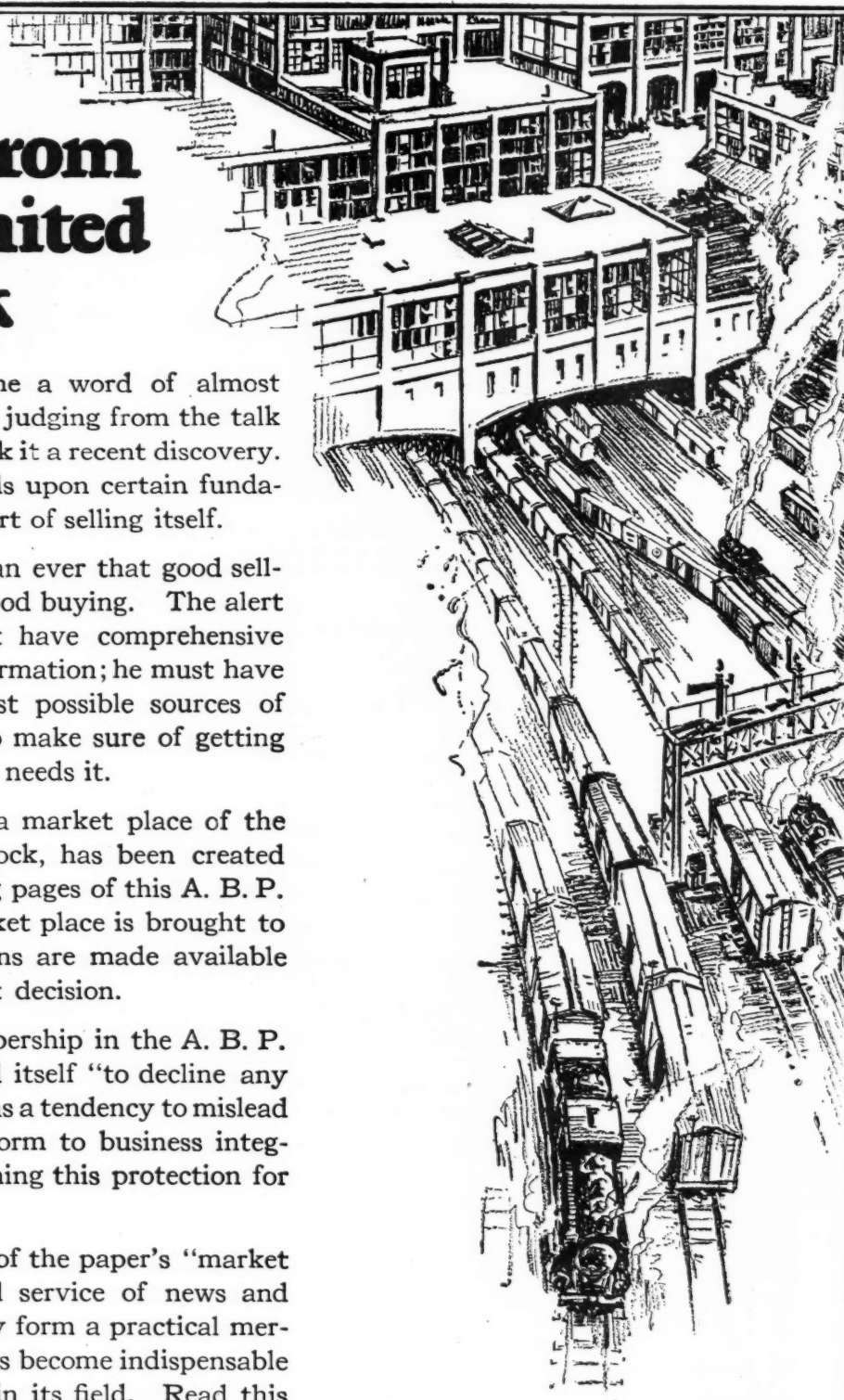
Paralleling the service of the paper's "market place" is the editorial service of news and counsel. Together they form a practical merchandising tool that has become indispensable to the best merchants in its field. Read this paper regularly and benefit by its editorial content and the advertising it carries.

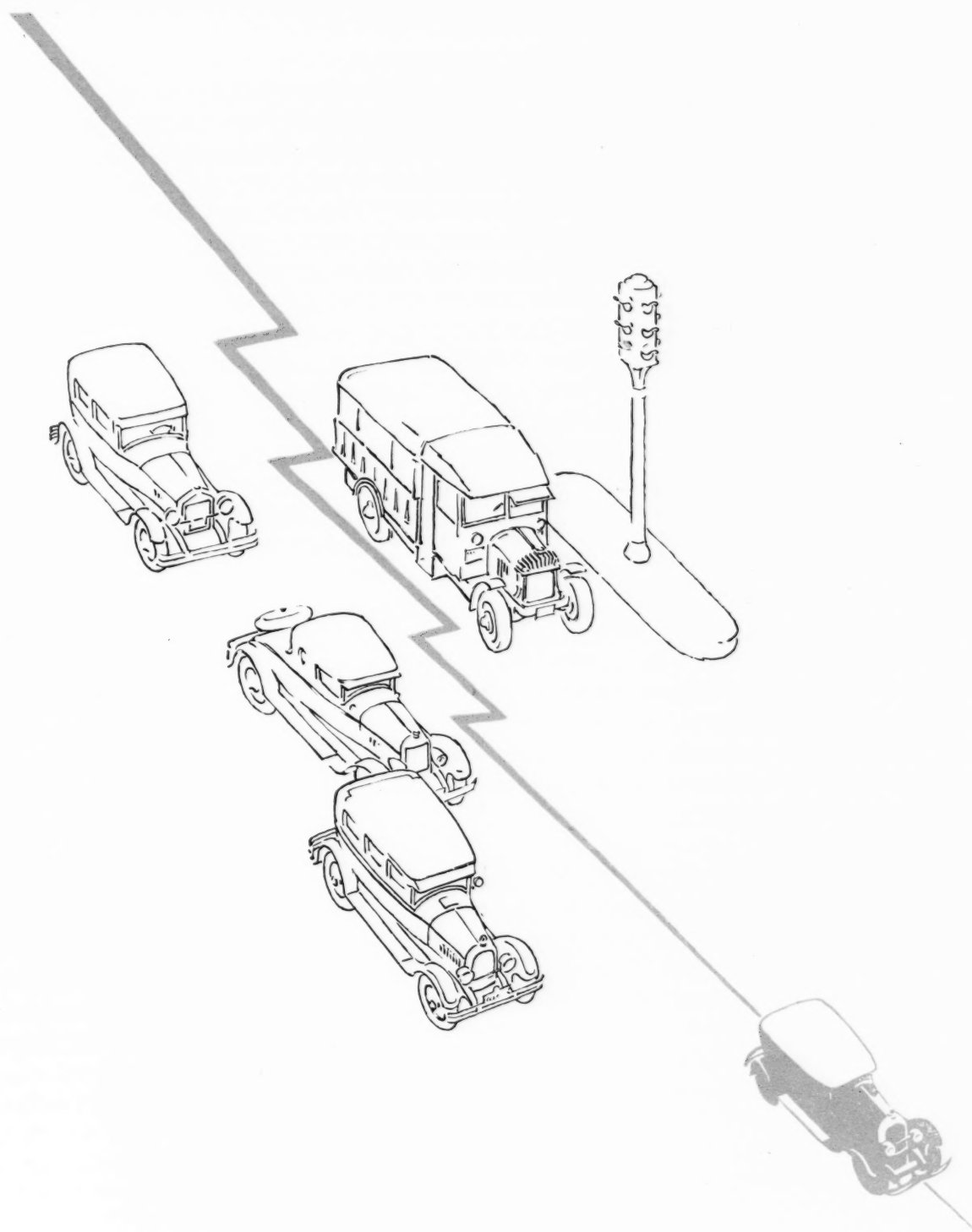
THE ASSOCIATED BUSINESS PAPERS, Inc.
Executive Offices: 220 West 42nd St., New York, N.Y.

*An association of none but qualified publications reaching
the principal fields of trade and industry.*

A. B. P.

MOTOR AGE is a member of The A. B. P.





As previously announced, Marmon will build a small, fine car, as a line companion for the large Marmon. This new product of quality manufacture opens up a new and vast market, the dealer opportunity of which has been approached only twice within recent years. (See Next Page)



COMPANION TO THE LARGE MARMON

the little MARMON

The Little Marmon has been doing some rather interesting and phenomenal things of late.

It is unquestionably the most versatile car ever built in this country.

It runs well over 70 honest miles an hour—hour after hour.

Its graceful little radiator gives it instant and unmistakable distinction.

It actually rivals the big Marmon in road balance and riding quality.

In performance as well as in general conception it is not in competition with any existing automobile.

It incorporates so many new features; it so completely fills the need for which it was created that it is difficult, indeed, to think of any automobile that could have a broader or more virile market.

It is going to be a great opportunity in small towns as well as in the large metropolitan centers. This car is almost universal in its appeal

—and the greatest factor of all is that its price places a car of Marmon manufacture—a car with a Marmon name

—within the reach of thousands who for years have hoped some day to own a Marmon.



The Little Marmon will be shown, by appointment to all interested distributors and dealers at the factory, beginning the latter part of September. Please write or send the attached card in advance so as to meet with your convenience and ours.



Marmon Motor Car Co.

Indianapolis, Ind.

We are interested in seeing The Little Marmon in a private, prior showing at the factory. It is understood that this request is to be held confidential.

Firm Name _____

By _____ Address _____

City _____ State _____

Four Companies Consolidate

Founded upon the vital need of a broader and more complete service on shop equipment after its sale, the General Equipment Corporation on July 1 became a new and important factor of the motor car industry.

Four companies, each of whose products has national reputation, today are merged in one great unit. Allen Electric Manufacturing Company, American Sharpening Machine Company, Dearborn Equipment Company and Hempy-Cooper Manufacturing Company now are combined.

From this merger of engineering thought and manufacturing achievement and financial stability every Service Station must directly profit.

There will be constant contact at Detroit with the engineering departments of the motor car factories—and this infers the design of many new labor saving service machines not now available to motordom.

A field service program is established—one which insures not merely that General Equipment be properly installed and operating—but that such equipment be working *profitably* for its users.

In short, the General Equipment Corporation will create new standards of equipment excellence and a personalized service such as car manufacturer, dealer and wholesaler, distributor and service man have hoped for these many years.

General Equipment Corporation

Main Office and Factories

Kalamazoo, Michigan

ANNOUNCING AN OPPORTUNITY FOR



Heat—
and plenty
of it!

\$5 to \$8

for Ford, Dodge,
Chevrolet, Hudson,
Oldsmobile, Buick,
Studebaker, Nash,
Jewett, Willys-Knight
and several others

PERFECTION

NO CAR IS COMPLETE

UNPARALLELED HEATER SALES

*This new type Perfection Heater
literally pours clean wholesome
heated air into a car*

HERE is opportunity! For dealers and service stations everywhere it offers the means of doing a mid-summer volume of business right through the usually dull winter months—a mighty profitable business, too.

For years car owners everywhere have recognized "Perfection" as the *best* in motor car heaters. Shortly they will know that Perfection has developed a *new type heater* with wonderful new advantages.

A heater that heats almost instantly—fills the car with fresh, pure warmth.

A heater that cannot possibly leak exhaust gases. It has been approved by the Underwriters Laboratories.

A heater that can be installed quickly and easily. Just one hole to cut—no drilling or machining necessary.

And, not least important, a heater *priced so low* that it is within reach of every car owner.

Your customers are going to know about this new type Perfection Heater, you may be sure! The biggest advertising campaign ever placed in the heater industry will tell them about it. It will be announced in a double page in the Saturday

Evening Post in September, and thereafter through January, a full page in that publication will appear every other week, telling the story of this advance in automobile heater equipment, to millions upon millions of readers.

You simply can't afford to let such an opportunity slip by. It's none too early right now to make preparations for getting a nice, fat share of this profitable Perfection Heater business this winter. Send in the coupon!

THE PERFECTION HEATER & MFG. CO.
Cleveland, Ohio

*Makers also of that sensational development
in carburetion, the Swan System; through
its subsidiary The Swan Carburetor Co.*

PERFECTION HEATER & MFG. CO.
6543 Carnegie Avenue, Cleveland, Ohio

Please send me a full description of the new type Perfection Heater for motor cars—also complete information about your attractive dealer franchise.

Name _____

Street _____

City _____ State _____

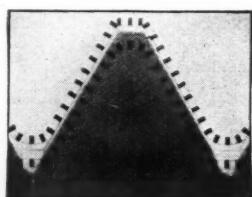
☐ I am interested in the complete line.

☐ I am a dealer for _____ car.

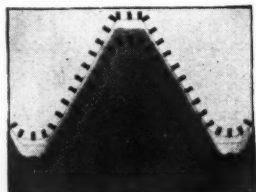
MOTOR CAR HEATERS
WITHOUT A PERFECTION HEATER



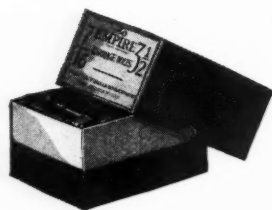
"They're ALL Perfect!"



*Comparator photograph,
hardened and ground
gauge thread.*



*Comparator photograph,
New Process bolt thread.*



THE unique method of *building up* the Empire New Process Bolt thread results not only in a wholly new conception of accuracy but in DURABILITY far surpassing that of any other bolt. The steel molecules are brought into a closer bond under the pressure of the New Process dies. A New Process thread is many times stronger than ordinary threads. *You cannot strip it.*

RUSSELL, BURDSALL & WARD **BOLT & NUT COMPANY** **PORT CHESTER, N.Y.**

Branch Office:
Seraus Building
CHICAGO

Branch Office:
General Motors Bldg.
DETROIT

Branch
Factory:
ROCK FALLS, Ill.

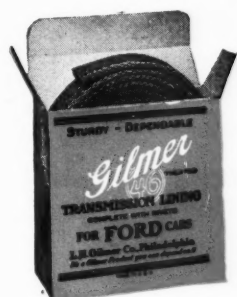
Scrimple & Gillette
169 Jackson Street
SEATTLE

Maydwell & Hartzell, Inc.
158-168 Eleventh Street
SAN FRANCISCO

Makers of Bolts, Nuts and Rivets Since 1845

EMPIRE *New Process* BOLTS

More GILMER Transmission Lining for FORDS is being sold now than ever before—because each new day brings stronger proof of its desirability as a replacement unit.



GILMER Transmission Lining is easier to sell because its *extra quality* shows in the lining itself. And Ford owners everywhere *know* the Gilmer reputation and will buy merely upon seeing the name on the package.



"Gilmer is a Good Name to tie to"

L. H. GILMER COMPANY, Tacony, Philadelphia, Pa.

Gilmer

Makers of the World's
Best Known Fan Belts

14,580,000 People welcome Whippet with greatest ovation ever given new automobile

In 3 dramatic weeks, this revolutionary European-type, high-speed light car has become the most talked about automobile in America. Millions welcomed it. Thousands bought it.

† † †

ON SATURDAY, June 26th, America witnessed the greatest ovation ever given any new automobile.

Here are the high spots . . . facts and figures of vital interest to everyone considering the purchase of a car this year.

In New York City, 57,452 people in two days thronged the streets and showrooms to see this amazing new-type car.

In Wayne County, Detroit, 213,000 people saw the Whippet in its first 3 days.

In Chicago, 62,176 in four days. In Milwaukee, 27,122. In Boston, 30,000. In Elmira, 15,000. From all over America came reports of overwhelming interest.

In many showrooms people were turned away at midnight. Thousands of orders

were placed without even a demonstration.

The whole country was electrified by this new-type car that offered such amazing economy . . . such revolutionary performance.

Dramatically . . . the Whippet has become the topic of conversation everywhere. Overnight it took the spotlight of success.

† † †

The whole automobile situation in America has changed within the last 60 days.

Values have changed. Selling standards have changed. List prices do not mean the same today.

Resale values of less modern and less efficient cars than the Whippet are bound to suffer.

Dealers all over the country were quick to realize that a vital change was taking place . . . hundreds of them have already applied for the Willys-Overland franchise.

It will be much easier to sell the Whippet than to compete with it. Write or wire today for complete franchise details.

Willys-Overland, Inc., Toledo, Ohio
Willys-Overland Sales Company, Limited, Toronto, Canada
Willys-Overland Crossley, Limited, Stockport, England

OVERLAND

America's New-



Whippet ~ ~

Type Light Car

BADGER RADIATOR HOSE

*An Unusually Good
Hose for Unusually
Good Service*



FORD CONNECTIONS



Made up in 3-foot lengths, three plies of fabric inserted with a high-grade inner tube especially compounded to resist the effects of heat, oil and anti-freeze compounds. Finished with a high-grade red rubber cover, calibrated in one-inch markings, Badger branding, with size indicated every three inches. A very high-quality hose, of heavy wall thickness, possessing the non-collapsible feature under strong pump suction.

Packed, 6 3-foot lengths in heavy shipping container, labeled on end showing quantity and size.

Red Cover-Fabric Inserted

This is of the same high-grade quality as the Badger Red Hose in 3-foot lengths, with heavy wall thickness and inner tube, made to withstand heat, oil and anti-freeze solutions, each piece carrying the Badger brand. Packed 12 pieces in shipping container.

Black All-Fibre

A very serviceable connection, of All-Fibre black rubber, similar to Hose furnished as original equipment on Ford cars. Especially constructed to withstand effects of oil, heat and anti-freeze compounds.

Shipped in bulk only—lots of 100 pieces.

Dealers Supplied Through Jobber Trade, or Write

THE BADGER RUBBER WORKS

MILWAUKEE, WISCONSIN

A complete tire chain business in 9 square feet of floor space

6

widths of tire chain stock fit every size tire that is made.



9

square feet of floor space for service station, stock and display.

Kicked-over precedents are the milestones of the automotive industry's progress. Constant striving for improvement all along the line of product and service is the outstanding characteristic of the business. *Here then* is another to-be-expected achievement—the Hodell Tire Chain Sales & Service Station—a better and more profitable way to sell tire chains.

Standard tire chains have always been sold ready-made. To maintain a full stock to fit all tires is beyond the reach of the average dealer. He cannot afford either the storage space or the heavy capital investment. Therefore he keeps a small stock—and loses many sales because he is usually "out" of the one particular size asked for.

Ready-made tire chains often do not fit because tires of different manufacture although marked the same vary as much as four inches in circumference. This causes re-fitting—and re-fitting eats up much of a dealer's profit.

To add to the difficulties, the increasing number of tire sizes calls for even

larger stocks than before. And finally, there have never been proper tools in any dealer's shop for re-fitting and servicing tire chains unless he made them himself.

Now *all that is changed* by the Hodell Tire Chain Sales & Service Station. Complete stock—with which the dealer can fit every tire on the road—is compactly stored in 9 square feet of floor space. There is never a loss from leftovers because all the stock is always salable.

Hodell ladder length tire chain stock with standard twisted-link cross chains assembled comes to the dealer in cartons ready to slide into the service station.

Hodell Tire Chains as supplied in ladder lengths as stock for these cabinets are standard in every respect. Twisted link brass plated cross chains, cased to diamond hardness, galvanized side chain, all full weight and count; highest quality obtainable.

Aside from hanging up the free end of stock for display there is no other handling until a sale is made.

When making a sale the service station owner simply cuts off the exact length of the proper width of stock as shown on his chart for all sizes of passenger car tires, attaches fasteners—and the sale is made.

With the newly designed one-piece fastener, the rivet set and cutting tool—the dealer can make and sell a set of tire chains in an incredibly short time.

Here's a complete tire chain business—fully stocked and equipped—ready to start earning money *right now*. Put it to work—watch it sell tire chains—see how profitable 9 square feet of floor space can be! The Hodell Tire Chain Sales & Service Station complete as described sells for about \$200.00! Wire or write your jobber to reserve one for you now.

Our policy is restricted distribution. Reservations for territory allotments for Jobbers now being closed. Wire for information.

THE CHAIN PRODUCTS CO

3928 Cooper Avenue

Established 1886

Cleveland, Ohio

Hodell

Tire Chain Sales & Service Station

Have you ever made this wish about Pistons and Pins?

"I wish," said the Service Manager at one of the best known Detroit motor plants, "that we could avoid guessing ahead several years on replacement pistons and pins for every model of motor we make. How we could cut that inventory!"

"I wish," said the engineer for a well known motor truck, "that we didn't have to sort our piston pins into different sizes by the 'try-fit' method. How we could cut the inventory and assemblage costs!"

"I wish," said the motor assemblage foreman in another automotive plant, "that my workmen could pick up a piston and pin, and know that they would fit perfectly—no tryouts, no variation, no sorting, only one size to carry in the inventory, or that I could have the piston and pin come to me fitted together ready for the connecting rod."

Arrow Head has given these three men their wish. Concentration of resources in men, material and money, has brought Arrow Head pistons and pins to a state of perfection that means simplified procedure wherever motors are made.



Each genuine Arrow Head part is marked with an Arrow Head

Arrow Head's most complete and flexible up-to-date line assures quick service on the 3,500 most-called-for fits and applications, including practically "all motors, all years, all models."

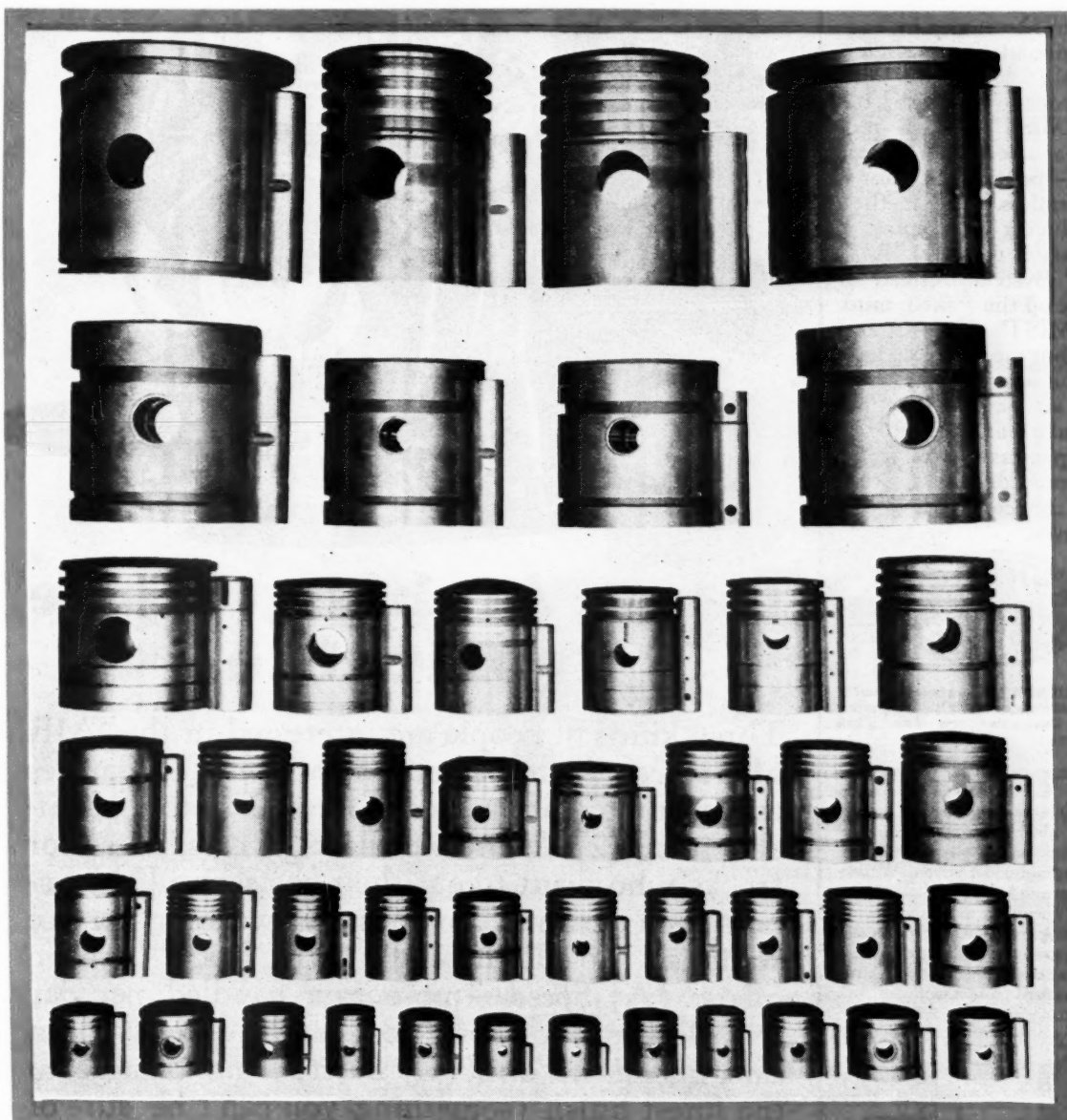
Are your motors more expensive or less satisfactory than they would be with Arrow Head standard pistons and pins? Let our engineering department tell you what we can do to supply you with equipment and replacement pistons and pins made to your own specifications.

ARROW HEAD STEEL PRODUCTS CO.

Minneapolis, Minn.

Arrow

Pistons • Piston Pins



Arrow Head is in daily production of pistons from 1½" to 12" in diameter—for automobile and truck motors, tractors, air and ammonia compressors, Diesel and all types of internal combustion engines. A flexible plant organized to supply your equipment stocks or short runs for replacement.

Head

Axle and Drive Shafts

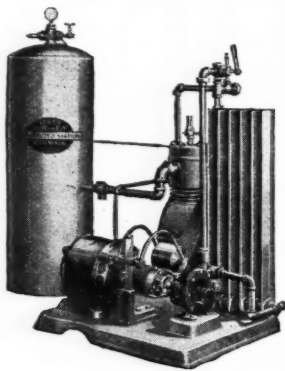
Curtis
"AIR MIST"
(IMPROVED)
CAR WASH SYSTEM
(WITH WESTCO WATER AMPLIFIER)

Contains features found in no other. Developed by leading pneumatic engineers. Instead of violent water force [dangerous to car finish], the "AIR MIST" System produces a safe air-and-water spray — penetrating, cleansing, harmless. The method of producing this spray is exclusive to the "AIR MIST" System. Instead of blasting off the caked mud, "AIR MIST" softens it and gently but rapidly sloughs it off. The same system furnishes air for tire inflation, vacuum cleaning, polish spray, penetrating-oil spray, paint spray, drying moisture from crevices, and many other uses.



The "AIR MIST" System is Built by the Makers of the Popular Curtis Compressors for Tire Inflation.

In Air Compressors for every purpose the name "Curtis" means exceptional value. Quantity production, manufacturing efficiency, and unique design make possible a quality compressor at less than usual prices. Wherever compressed air is used—as in operation of pneumatic tools, spray painting, hoisting, rock drilling, pavement breaking, car washing and a thousand other uses besides tire inflation, Curtis is the standard compressor.



Car Washing Made Profitable!

Three kinds of people are interested in the "AIR MIST" car wash system. They are: [1] Garages that want to turn a "necessary evil" into a profitable item; [2] Owners of fleets of cars, busses or trucks who want to cut their costs; and [3] business men desiring to open car washing service stations. To all these the "AIR MIST" System offers: [A] *Speed*—more cars handled per day with lower labor cost; [B] *Results*—really clean cars, inside and out; [C] *Safety*—no damage to the finest finish [something you can't be sure of with high-pressure washing systems]. There is real profit in owning a Curtis "AIR MIST" System. May we send you full particulars?

Curtis Pneumatic Machinery Co.
 1957 Kienlen Av., St. Louis, Mo.

1854—Seventy-Two Years—1926



CURTIS Pneumatic Machinery Co.
 1957 Kienlen Ave., ST. LOUIS, MO.
 518 U Hudson Terminal, New York City.

Please send me, without obligation, your new free "AIR MIST" catalogue.

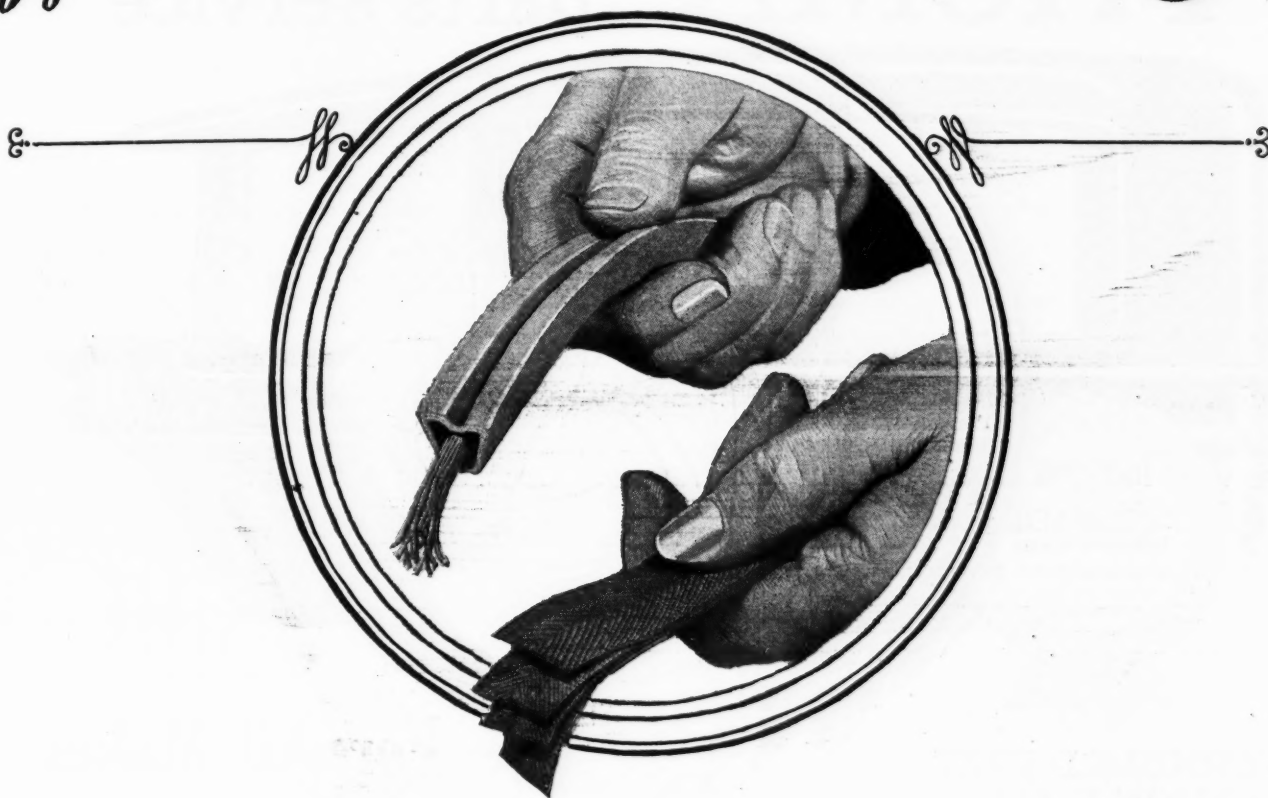
Name..... City.....

Address..... State.....

CURTIS

COMPRESSORS-HOISTS-CRANES
 AND AIRMIST CAR WASH SYSTEM

Why not sell Fan Belt Mileage?



At the left is the Farran-oid Dual-flex Molded "V" Type Belt. It is built about an endless, stretch-proof core. The groove in the top allows the belt to completely fill the pulleys giving complete contact and a sure grip on the sides, thereby insuring full power.

At the right is the Herringbone Flat Endless Belt. Four plies of specially woven tape, impregnated with a special Farran-oid Rubber Compound. Woven loosely in the center and tightly on the edges to allow it to conform to the pulley's contour. It won't slip—won't stretch.

The expression "tire mileage" is known to every car-owner. Why not sell him fan belt mileage as well? Make him think in terms of the extra long distance his car will run without fan belt trouble IF he equip with a Farran-oid Fan Belt. There is big business in not only Farran-oid Fan Belts but also the whole Farran-oid line. We base our success squarely on the extra fine Quality built into every item. A real trade builder for the dealer.

THE FARRAN-OID COMPANY, AKRON, OHIO

Farran-oid

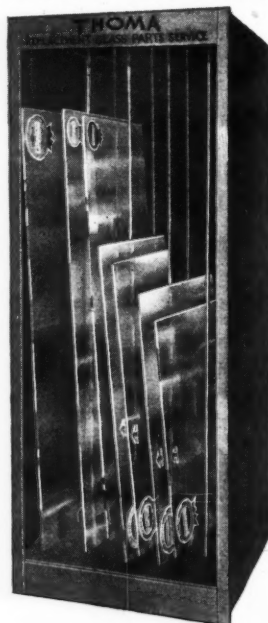
Products

Fan Belts Radiator Hose Tire Flaps Garage Air Hose Ford Floor Mats
Car Washing Hose Tube Patch Outfits Blow-Out Patches Universal Tire Plasters

THOMA replacement glass parts service



**FURNISHED FREE
THOMA ALL
STEEL CABINET**



**For Your Replacement Glass
Parts Dept.**

This Glass Rack Furnished FREE to All Dealers THOMA AUTOMOTIVE GLASS SERVICE — Replacement Glass Parts (Windshields and Body Glass)—for All Makes Cars. Write for further information.

For All Makes of Cars

Dealers from coast to coast are rapidly perfecting their service and are offering their clientele of car owners Thoma Replacement Parts. Because only "Thoma" has a service that guarantees the dealer and consumer absolute satisfaction.

The closed car has revolutionized the automobile industry and has made it necessary for dealers to change their methods of merchandising. All dealers want satisfied customers and want to service their make care with all replacement parts, including *Glass Parts*.

A New Replacement Line

for your Parts Department—*Thoma Glass Parts*. The most outstanding Replacement Parts Line the dealer has found necessary to stock since the advent of the closed car.

The Thoma "Blue Seal" (Trade Mark) is your recommendation and our "Guarantee" to car owners. Every light of Genuine Thoma Service carries the "Blue Seal" Thoma Identification; bearing pattern number and parts replacement description.

Thoma Service simplifies dealer's stock and minimizes investment. For a small investment you can add this valuable Thoma Replacement Glass Parts Line to your parts department, which will give you rapid turnover and a real *Profit*.

Service price lists available for all makes cars.

Manufactured Exclusively By:

THOMA & SON-INC.

Everything in
Glass for the Automobile
FAIRFIELD, IOWA



The Largest Office Building

in uptown New York. Occupying an entire square block 25 stories high. Offices from 450 sq. ft. up. Floors 20,000 sq. ft. Occupancy April, 1927. Headquarters for automotive offices and showrooms:-

Among the tenants are:

General Motors Corporation
Occupying 13 floors
 Metropolitan Automobile Assn.
 Hudson Motor Car Co. of N. Y.
 Warren-Nash Motor Corporation
 Rickenbacker Motor Company
 Rolls-Royce of America, Inc.

Architects:

SHREVE & LAMB

Builder:

G. RICHARD DAVIS & Co.

Engineers:

CLYDE R. PLACE
 LANGE & NOSKA

Offices

At the Bullseye of

Automobile Row

*This is the best way
 I know to show you
 the best office location
 in New York for
 automotive interests!* JCC

Plans and Particulars now ready

50 EAST 42ND STREET

**CUSHMAN &
 WAKEFIELD, INC.**

Renting & Managing Agent

NEW YORK CITY

GENERAL MOTORS BUILDING

Broadway to 8th Ave. ~ NEW YORK ~ 57th to 58th Street

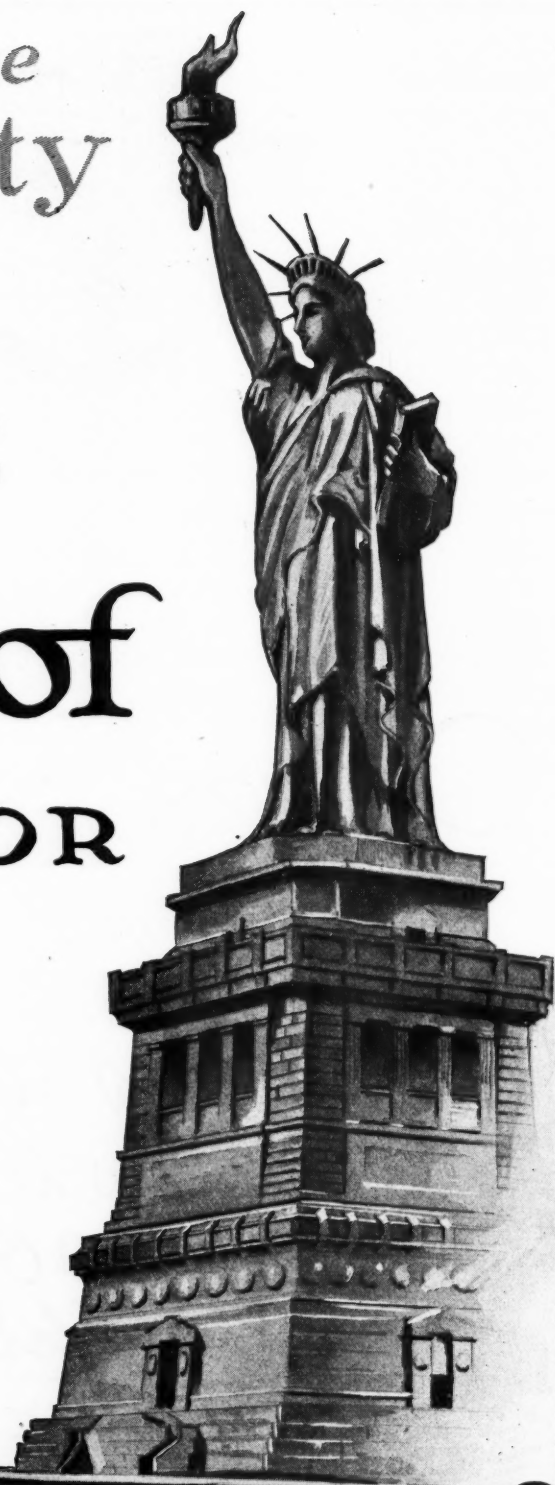
There's only one
Statue of Liberty

ONLY ONE
Glareproof
AUTO MIRROR

*Glareproof reflects all
objects in natural colors*

Glareproof

LIBERTY MIRROR WORKS
PITTSBURGH PENNA.





Westward Ho with the Leaders

Just outside Los Angeles, in the city of Long Beach, on the western edge of America, is this store of Glenn E. Thomas Company, managed by A. H. McCune. Here, giving display to famous products such as Firestones and U. S. Royals, to Mazdas and Champions, there are the nationally known Lyon Steel Counters and Lyon Steel Shelving.

A look at this store shows that Lyon Auto Parts Control Systems raise auto parts store keeping to a high level of merchandising. Here is display and order—invitation to buy and quick service.

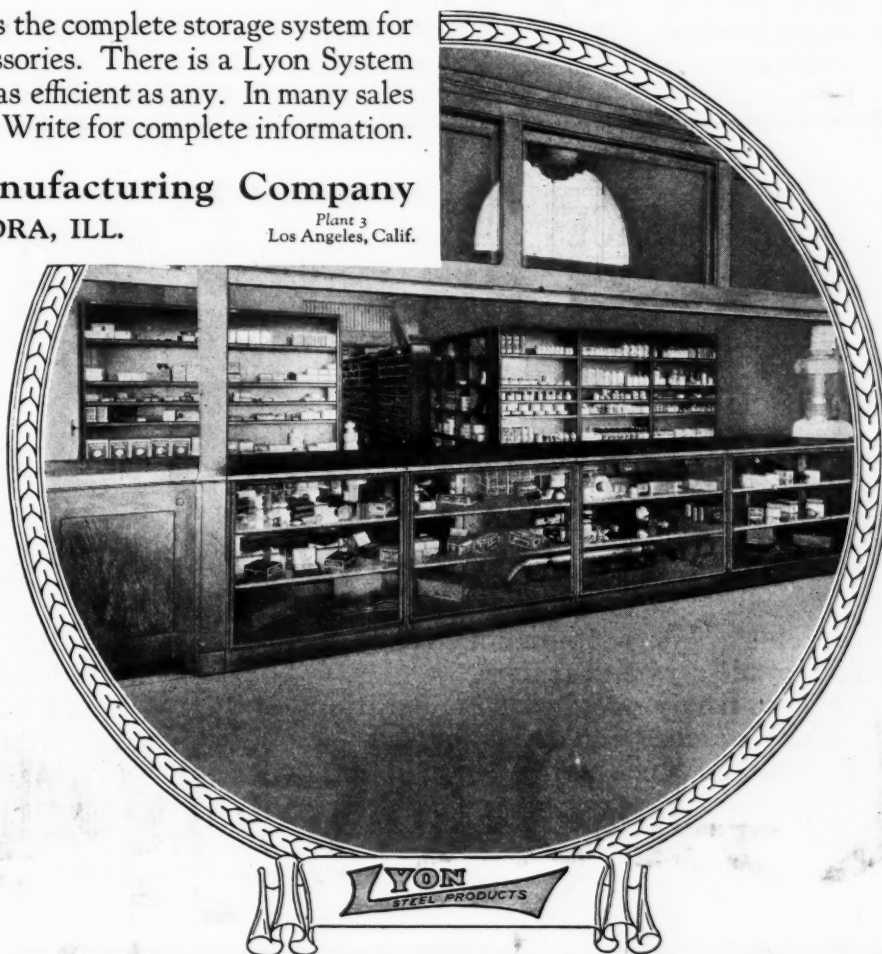
Lyon Auto Parts Control is the complete storage system for automotive parts and accessories. There is a Lyon System that will make your place as efficient as any. In many sales easily made there is profit. Write for complete information.

Lyon Metallic Manufacturing Company

Plant 2
Newark, N. J.

AURORA, ILL.

Plant 3
Los Angeles, Calif.



Leading Automotive Jobbers Sell

LYON AUTO PARTS CONTROL

COMPLETE STEEL STORAGE SYSTEMS FOR AUTOMOTIVE PARTS AND ACCESSORIES

Be Sure to Get This **SHALER** Selling Cabinet!

Every dealer should ask his jobber's salesman how to get one of these attractive Shaler Selling Cabinets—free.

Dealers who have it on the counters are the ones who are getting the full benefit of our big advertising in The Saturday Evening Post or Liberty every week, other national magazines, farm papers, etc.

It sells 'em almost every time, and the more vulcanizers you sell the bigger your repeat business on Shaler Patch-&-Heat Units which users continue to buy year after year.



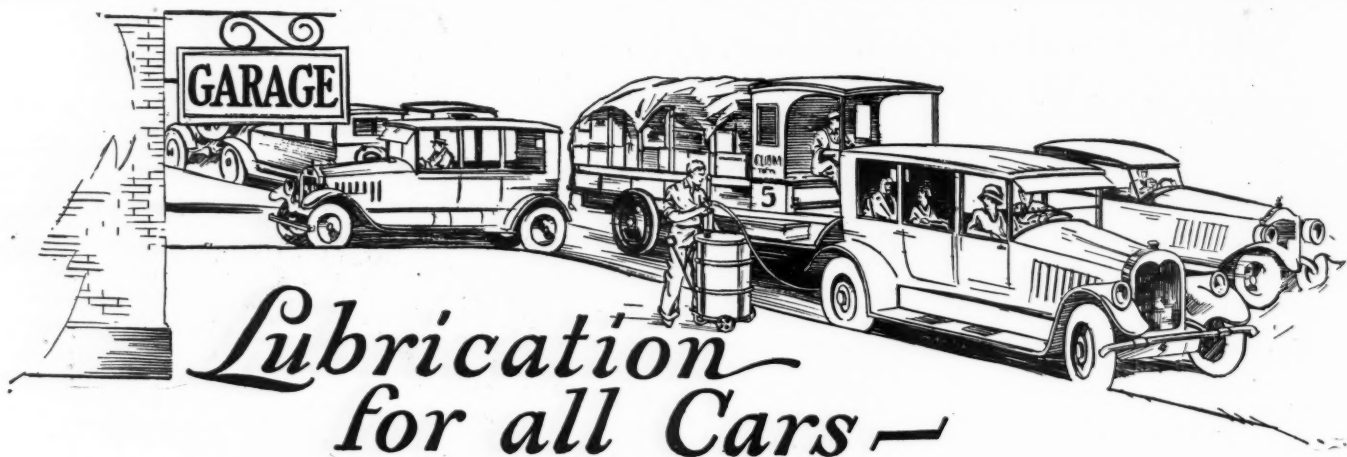
The illustration above shows how the cabinet looks. It has a four-color metal front, 11x14 inches, big enough to show up well but not too big to go on the showcase. Cabinet, finished in crystalline lacquer, holds a dozen vulcanizers.

A real vulcanizer comes with the cabinet for display, also a real repair on a section of tube so customers can compare with old-fashioned patches. Placed on your counter, it will sell many vulcanizers for you.

Ask your jobber's salesman how to get it free, and write for our attractive display material.

C. A. Shaler Co., 215 Fourth St., Waupun, Wis.

World's Headquarters for Tire Repair Devices



Lubrication for all Cars—

Dixon's 677 is recommended for the gear-boxes of all cars and trucks.

It flows freely over gears in operation yet does not squeeze out under load.

It is not affected by heat or cold and pro-

vides a film of lubricant that lowers wear to a minimum.

Dixon's 677 assures your customers of freedom from lubrication worries.

Write for Booklet 82-G and prices.

JOSEPH DIXON CRUCIBLE CO.

Jersey City, New Jersey

Established 1827

DIXON'S 677

Electrical Refrigeration for the Average Household

We are in the ice machine business because we have great faith in its future. We want distributors and dealers; the right kind of men who can take over important territories and grow with us.

The Couzens Ice Machine Company is new in name. Several months ago, however, we bought Superior Refrigeration, Incorporated of Lima, Ohio, of which Frank Andrews was chief engineer. With his basic knowledge, reinforced by the best production methods developed in the American automobile industry, we are determined to meet the electric refrigeration requirements of the average American household.

Our present line offers more cubic feet of electric refrigeration per dollar of cost, than any other machine built today.

Our plans for the present and the future should interest every man who is now in this business, or who considers entering it. We invite inquiries from those who are sincerely interested in what the Couzens Ice Machine Company has to offer its dealers.

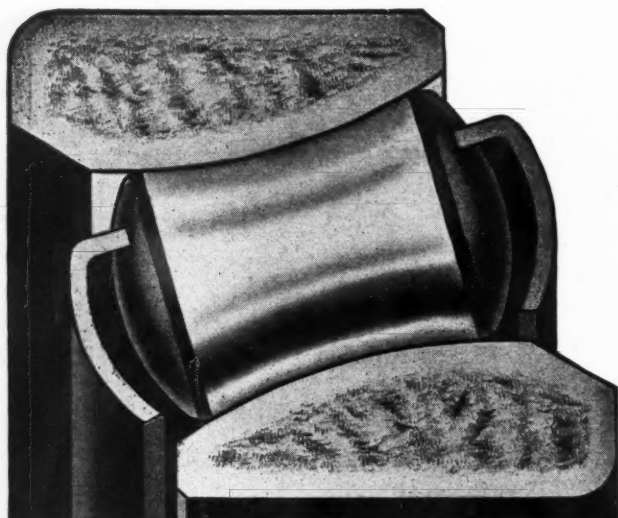
James Couzens
President

COUZENS ICE MACHINE COMPANY, 1228 First National Bldg., DETROIT, MICHIGAN

Couzens

As early as 1909, Frank Andrews, now chief engineer of the Couzens Ice Machine Company, used sulphur dioxide as a refrigerant, in an electrical refrigerator which he built and installed in a restaurant at Lebanon, O. Couzens-built Refrigeration is a direct development of this revolutionary device. Since that time, Mr. Andrews has originated, perfected and patented many valuable features of electrical refrigeration.

THE
NEW NAME
IN
ELECTRICAL
REFRIGERATION



SHAFER

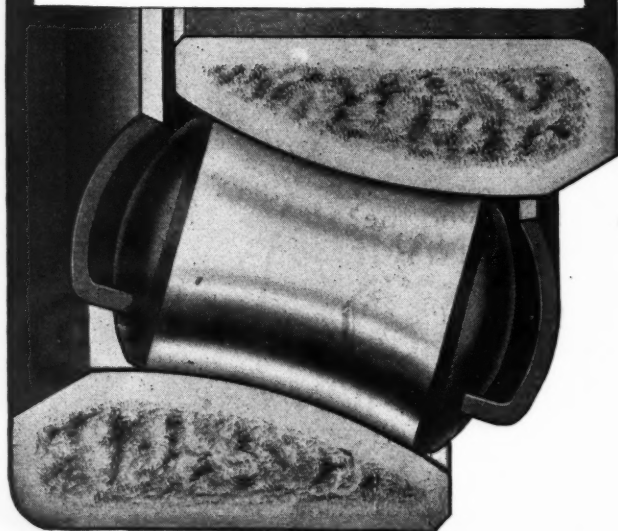
"Self-Aligning"
ROLLER BEARING

PATENTED

"In reference to our experience with Shafer Self-Aligning Roller Bearings, I wish to advise that we have always had good satisfaction with these bearings and have been very well satisfied with the service and material of this product."

Edw. H. Baker Corp.,
Buffalo, N. Y.,
Harry Alcock, V. P.

SHAHER BEARING CORPORATION
6501 West Grand Avenue
CHICAGO, ILL



THERE IS ONLY ONE
PRACTICAL ODORLESS
CLEAN SAFE METHOD
OF HEATING A MOTOR
CAR - - -

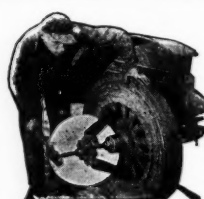
THAT IS BY USING
THE HOT WATER WHICH
CIRCULATES ROUND
THE MOTOR BLOCK.

THERE IS ONLY ONE
HEATER THAT DOES
THIS.

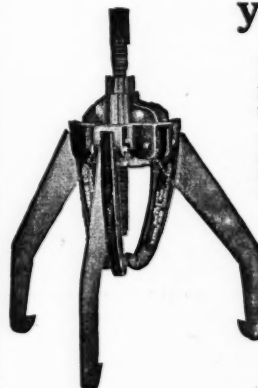
MOT - ACS
Inc

42 Broadway

New York City



**Don't let Stubborn Parts slow
you up!**



Greb Pullers have been standard for 10 years. Take wheels, gears and bearings off in a jiffy. Enable you to make money on the Flat Rate basis.

Two or three jaw types. Adjusted instantly. Lock in any position. Grip is positive. Can't harm parts. Also shock type pullers.

No matter what your need in pullers, we have it. Several dozen models.

Your jobber will tell you about Greb Pullers. If he can't, write us for catalog mentioning jobber's name.

**10
Days
Trial**

THE GREB CO., Inc., 305 Canton St.
Stoughton, Mass.

**GREB AUTOMATIC
GRIP PULLER**
BEACH PATENT

Put Your Money on a WINNER!



When you put money in a stock of goods you are merely making a bet with yourself that you can sell them at a profit.

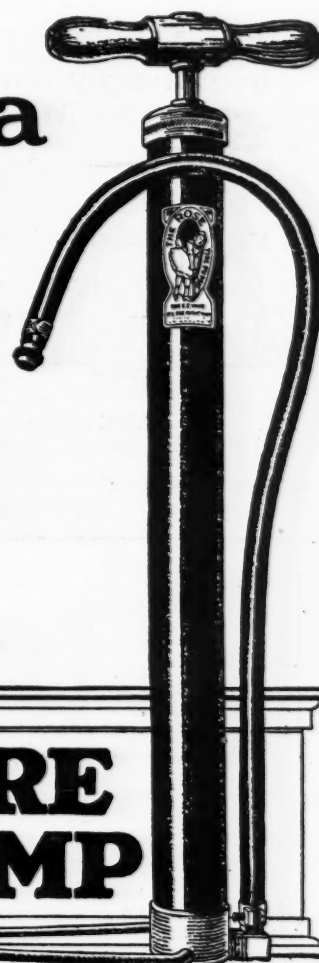
The men that make the money are the ones who play the consistent winners.

In the tire pump field Rose has lead all others in sales every year for eleven years.

It is a pretty safe bet that if you hold your tire pump stock down to Rose Pumps you will win.

All jobbers carry them.

FRANK ROSE MFG. CO., HASTINGS, NEBR.



ROSE

*Easy
Valve Action*

TIRE PUMP

How about
your shop
superintendent
?

Have you ever stopped to consider how many actual sales begin or end in the presence of your shop superintendent?

His attitude, and that of his men, can do—or undo—a great many dollars' worth of business for you in a year.

Your shop superintendent can be a valuable business asset. Are you helping him to be one?

MOTOR AGE
5 S. WABASH AVENUE
CHICAGO, ILL.

There Simply Isn't Any Better Flux Made Than Rubyfluid!



A complete substitute for dangerous acids, Zinc Chloride, Salammoniac and other mixtures commonly used as a flux. Ruby Fluid is quick acting, anti-rusting and is always ready for instant use. Ruby users include the foremost industries of the country. Send for generous Free Sample

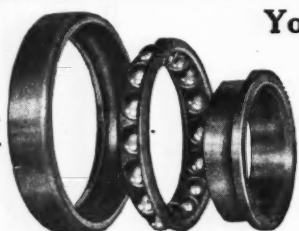
Rubyfluid

COMBINATION
SOLDERING AND TINNING FLUX

THE RUBY CHEMICAL CO.

68-70 McDowell Street

Columbus, Ohio

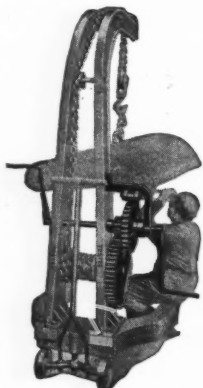


Your Present Bearing Sizes Duplicated

Or we will work from your blueprints and supply to your requirements of Angular Contact Thrust Bearings, Angular Contact Radial Bearings and Thrust Ball Bearings of all types.

Quotations are made promptly on all inquiries.

THE BEARINGS COMPANY OF AMERICA
LANCASTER, PA. Western Sales Office, 1012 Ford Bldg., Detroit, Mich.



CANTON

Portable Crane and Hoist
Is Now Equipped with Safety Friction Load Brake

The purpose of the Canton Portable Crane and Hoist, equipped as it now is with the new Safety Friction Load Brake, is to make even more money for service and repair shop men, than ever before. The Service Friction Load Brake holds the load at any point, and makes it impossible for the load to get away from the operator. On all new models and for all models already in use. Write for a copy of the illustrated booklet M. A., and additional literature describing the outfit. It will show you the way to better profits.

The Canton Foundry & Machine Co.
Canton, Ohio

New York Office—303 East 15th Street



Branches in:
New York
Chicago
Philadelphia
Boston
San Francisco

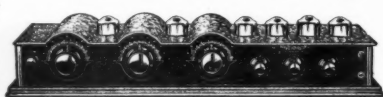
BUNTING

PHOSPHOR BRONZE
BUSHING BEARINGS

Put Bunting Quality into all Replacements

The Bunting Brass & Bronze Co., Toledo, Ohio

Neutrowound

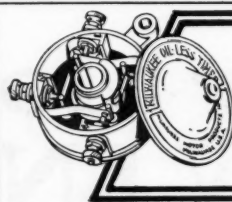


SUPER-POWER RADIO

Write for Exclusive Territory proposition to Sub-Distributors.

Neutrowound Radio Mfg. Co.
Homewood, Ill.
Radio Division

Advance Automobile Accessories Corp.



MILWAUKEE Oil-less TIMER for Fords

The self-centering timer with the Wiping Contact Action. Accurate, even firing under all conditions.
Milwaukee Motor Products, Inc.
Milwaukee, U. S. A.

\$2.75

WEED BUMPERS and Fender guards

for all cars including Ford, Chevrolet, Overland, Star and Gray



The SO-LO JACK

\$6.00 Retail

West of Mississippi \$6.50

4 3/4" LOW—HIGH 15 1/2"

The REAL Balloon Tire Jack

All Steel Construction

POWERFUL—STURDY—EASY TO OPERATE

A Sure Seller with your Trade

SO-LO JACK CO., Inc.

108 Massachusetts Ave., Boston, Mass.



UNITED STATES Portable Electric DRILLS

Built by the oldest maker of Portable Electric Drills in the World.

Catalog 105
Ask for

THE UNITED STATES ELECTRICAL TOOL CO.
Cincinnati, Ohio, U. S. A.

Hycor Brake Lining

FOLDED AND STITCHED
HYDRAULIC COMPRESSED

Millions of feet annually installed as factory equipment

THE MANHATTAN RUBBER MFG. CO.
PASSAIC, N.J.



WESTINGHOUSE AIR SPRINGS

The finest known method of shock absorption
THE WESTINGHOUSE AIR SPRING CO.

Factory and General Offices, New Haven, Conn.

New York Chicago Boston Philadelphia Los Angeles Cleveland

The boys who have read

MOTOR AGE

for twenty-five years

STILL THINK IT'S BEST!

Two Hones in One

HALL HONE

\$35.
at your Jobbers

Solid Pressure — Spring Pressure

Toot Sweet

TRADE MARK

Satisfies the Demand for a New Sound in Warning Signals

Car owners want new sounding warning signals. Thousands of them are adding an extra one besides the regular standard equipment. TOOT SWEET is a leader among beautiful sounding signals. Its 4 tones make it musical, but it is clear and commanding as well. Operates from the exhaust, without cost to owners. Liberal profits are available on sale and installation of TOOT SWEET. Ask us for complete details.

ILLINOIS BRASS MFG. CO.
Chicago, Illinois

Protect the Oil-Grooves

By finishing bushings with FULL spiral fluted SMOOTH-KUT Reamers. The full spiral causes a continuous shearing action that cuts clean and can't hurt the oil-grooves.



Patented April 7, 1925.

SMOOTH-KUT are the only full-spiral expansion reamers made. They are guaranteed, and reground by us at cost. Studebaker, Velle, Franklin, Lycoming, Muskegon and others use SMOOTH-KUT in production. As a finishing tool for the Piston pin hole.

Your jobber can supply them singly or in sets. ASK FOR THEM BY NAME, as imitations are inferior products.

Millersburg Reamer & Tool Co., Millersburg, Pa.

SMOOTH-KUT EXPANSION REAMERS
(Trade Name Registered)

In the next issue of

MOTOR AGE

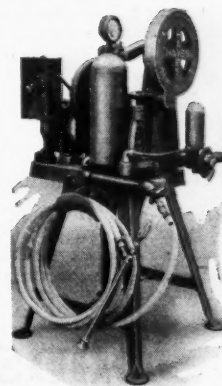
there may be a new
idea that will mean
many dollars of
profit to you . .

Don't miss it!

ELECTRIC "SPEED-SPRA" Original MECHANICAL WASHER

New 1 Gun 2 Man Hayes Electric "Speed-Spra"

For those thousands of garages, paint shops, auto laundries, car dealers and fleet owners who are entitled to the opportunity to decrease car washing costs and increase car washing profits—but who do not have enough work to keep our big "Speed-Spra" busy all the time, we have ready for delivery a



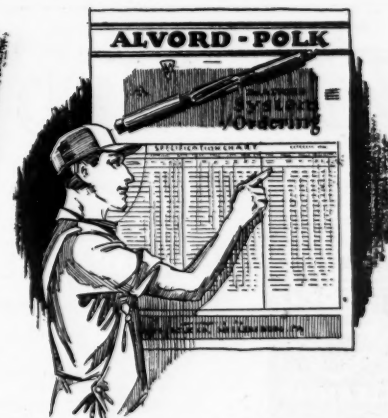
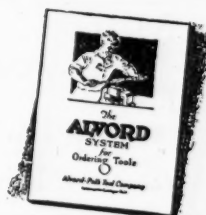
New "Speed-Spra"—New Price

National acceptance of our "Speed-Spra" as the correct method of mechanical car washing has made it possible for us to build a genuine "Speed-Spra" so low in price that any wash rack owner can quickly pay for it out of increased profits alone.

Get All Facts and Prices Today

Hayes Pump & Planter Company
819 Sixth Street, Dept. 19, Galva, Ill.

"KEEP THE WASH RACK BUSY !!"



This Chart shows just what Reamer to Use!

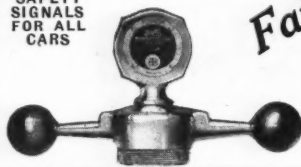
AT LAST you can stop guessing about fractional reamer sizes. Now you can use THE ALVORD SYSTEM instead. This ready reference plan instantly shows exactly which reamer to use on each repair job—lists jobs and reamers (by number) against make, year and model of car. The Alvord System is free to you in 2 forms . . . as a wall chart and as part of our new 64-page catalog listing our entire line of reamers, drills, taps and dies. THE ALVORD SYSTEM makes new reamer ordering easy, too. Unvaried quality for twenty years. Write today for free copy of wall chart and catalog and name of nearest jobber.

ALVORD-POLK TOOL CO.
Millersburg, Pa.

ALVORD - POLK

Tools for Repair Shops

MOTOR
SAFETY
SIGNALS
FOR ALL
CARS



Faith Beauty Ball

Locking Cap
For All Model Cars

Made by special process high in lustre, handsome and attractive. Withstands all weather conditions. Guaranteed not to crack. Senior Model \$4.50. Junior \$3.50. Ask your jobber.

FAITH MFG. CO.
2539-41 N. Ashland Avenue,
Chicago, Ill.



QUALITY—PROFIT—TURNOVER

**American
Hammered
Piston Rings**

American Hammered Piston Ring Company
Baltimore, Maryland

The **Gill**
Combination

FREE! Twenty minutes with this little booklet will show you the knack of selling piston rings, profitably. Sent free.



THE GILL MFG. CO.,
8300 So. Chicago Ave., Chicago, Ill.

Johns-Manville

ASBESTOS BRAKE LINING

LYCOMING Motors

Fine Fours, Sixes and Eights-in-Line
LYCOMING MANUFACTURING COMPANY, Williamsport, Pa.

Years Ahead in Motor Efficiency



Prevent
This

**Stops Pump Shaft Leaks
Immediately and Permanently**
Conneaut Plastic Metallic Packing molds in the fingers to fit stuffing-boxes of any size or shape. It is a repair for the worn shaft and loose bushing. At your jobbers; if not write us.

1 lb. can.....\$1.75 per pound
5 lb. can.....\$1.60 per pound
THE CONNEAUT PACKING CO.
Conneaut, Ohio



**Mallory
Ignition Coil**

Has two primary windings instead of one. Gives a hotter spark, makes easier starting, gives more power, quicker pickup and more mileage. Try it on a sluggish motor. Write for full particulars.

The Mallory Electric Corporation, Toledo, Ohio.

ZENITH

CARBURETOR

**More
Power
Less
Fuel**

Zenith - Detroit Corporation, Detroit, Mich.

RADIATOR
COVERS
—
TIRE
COVERS

Thomas

TOP
COVERS
—
SEAT
COVERS

WRITE FOR CATALOG

THOMAS AUTO TOP CO., MUNCIE, IND.



**SPEE-DEE CLEANS UP
for Dealers**

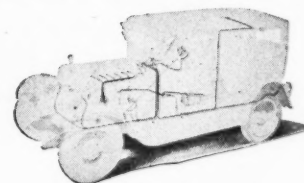
Results in quick stock turn-over, with small investment and liberal profits. Without water it removes grease, stains, etc., from hands, clothes, upholstery, paint or enamel. Indispensable in shops, service stations and car kits. List 35c.

Write for discount details.

States Chemical Company
703 W. Fulton St. Chicago, Ill.

Packard Cable

The Packard Electric Co.
Warren, Ohio



WEL-EVER

"OIL CONTROL" PISTON RINGS

The Motor Necessity That Has Made Good
Backed by Seven Years' Satisfactory Service

THE WEL-EVER PISTON RING CO., TOLEDO, OHIO
Sold most everywhere. If your dealer cannot supply you write us.



Let us
send our
profit-
boosting
plan.
It's Free.

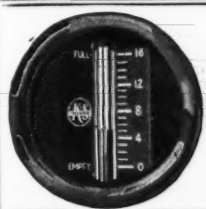
Thermoid
Hydraulic Compressed
Brake Lining

FROM THICK
TO THIN
DOWN TO THE
LAST PLY
IT HOLDS



Thirty-seven
BRANCHES

AHLBERG BEARING COMPANY
321 EAST TWENTY NINTH STREET, CHICAGO ILLINOIS



The K-S GASOLINE Telegage

A gasoline gauge on the Dash. Note our half-page advertisement in the Saturday Evening Post, September 18th. Write for description and proposition to the trade.

KING-SEELEY CORPORATION
298 Second Street Ann Arbor, Mich.
Chicago Branch, 2450 Michigan Boulevard



Here's the Way to Sell Tire Chains

Let the package they come in display them. By making them easy to buy, you automatically make them easy to sell. Dealers like the WESCO carton. Write.

Western Chain Company
Chicago, U. S. A.

GATES VULCO

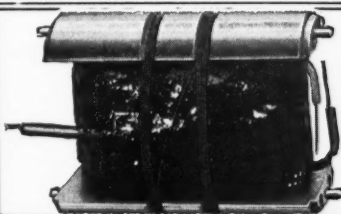
Fan Belts and Radiator Hose

Made By
The World's Largest Makers of Fan Belts



Prest-O-Lite

Automobile and Radio Batteries
Write for our interesting dealer proposition.
It means bigger profits for you.
The Prest-O-Lite Co., Inc., Indianapolis, Ind.



Magneto Windings

A Magneto is no better than its winding; you must have the best. The very finest insulation, hot spark, low speed. Beautiful rough gloss varnish finish; no better winding made. Each winding packed in individual box. ALL MODELS. Send in your Old Cores. Guaranteed.

Severson Magneto Engineering Co.
538 Fernwood Ave., TOLEDO, OHIO

The Original Bosch

Franchise details for selling ORIGINAL BOSCH Automotive Equipment will be sent to any Distributor, Dealer or Service Station on request.

ROBERT BOSCH MAGNETO CO., Inc.
109 West 64th Street New York, N. Y.



ORIGINAL BOSCH units bear the full name, Robert Bosch, and the trade mark shown at left. These are the identifications of Bosch quality-famous since 1887.

SCRANTON

BATTERY TESTERS

A Size and Type for Every Purpose and Every Price.
Descriptive Information on Request.

SCRANTON GLASS INSTRUMENT CO.
SCRANTON, PA.



THE "BAT" Super-Charger

A practical system of super-charging for passenger cars, trucks, tractors, marine engines, aviation engines, stationary engines, etc. Simple, easy installation. Practical. Prices range as low as \$7.50.



Write for details.

P. H. Webber Company

Racine Industrial Plant, Building No. 12, Racine, Wisconsin
Manufactured and sold under license of P. J. F. Batenburg, Racine, Wis.



THE PERFECT BRAKE LINING

See announcement of complete advertising and sales plans in the September 2nd issue of Motor Age.

United States Asbestos Company
Manheim, Penna.

Free
write for
your copy

The Book
'AIR PROFITS'
Shows how to get more work out of an air compressor. How to use compressed air for many pay jobs.

BRUNNER MFG. CO.
UTICA NEW YORK



SCHEBLER

The World's Finest CARBURETORS
THE WHEELER-SCHEBLER CARBURETOR CO., INDIANAPOLIS, U.S.A.

LIKUM Alarm LOCK

TYPE A
\$5.00

Locks ignition and sounds horn if tampered with

TYPE B
\$7.00

LOOMIS - KNIGHT - MILLER, Inc.
SPRINGFIELD - MASSACHUSETTS

CLASSIFIED ADVERTISING

PARTS

HOUSE OF A MILLION AUTO PARTS

The largest stock of new and used car and truck parts in the world. We have everything. Always mention model and serial number in order. Write us. All inquiries answered promptly.

DOUGLAS AUTO PARTS CO., INC.
2003-5-7-9 South State St., Chicago, Ill.

AUTO PARTS

SAVES 50% TO 75% ON ALL CARS

New and Used Gears—Springs and Axles—Cylinders—Motors—Rear Systems, etc. Wire or Write

INDIANA AUTO PARTS CO.
608-10 N. CAPITOL AVE., INDIANAPOLIS, IND.
LARGEST CAR WRECKERS IN INDIANA

PATENTS & PATENT ATTORNEYS

C. L. PARKER

Ex-Examiner U. S. Patent Office
Attorney-at-Law and Solicitor of Patents
McGill Building, Washington, D. C.
Patent, Trade Mark and Copyright Law

BUSINESS OPPORTUNITIES

GOOD OPPORTUNITY FOR MEN OWNING CARS to purchase automobile bulbs to sell to gas stations and dealers. Attractive discounts. Address Box 6277, Motor Age, 5 S. Wabash Ave., Chicago, Ill.

CLASSIFIED ADVERTISING RATES

Ten cents a word is the rate for all undisplayed advertisements set solid, regular want ad style; minimum charge \$1 an insertion. All capitals, 12c a word; all capitals, leaded, 15c a word. Payable in advance.

Business success depends upon the satisfaction of business wants—hence

Classified Advertising

Test the Coil, too!



Get one of these Jefferson No. 25 Testers to quickly test out 6 or 12 volt coils without removing them from the cars. Instantly detect primary or secondary trouble, electrical shorts, open circuits, condenser defects, etc. Enables you to prove the fact before a motorist's eyes when you find his coil is weak or burned out. Complete, with 6 flexible cables (equipped with snap terminals) and full instructions, \$8 net. \$8.10 net west of the Rockies.



Make More Money Replacing Weak Coils With Jeffersons!

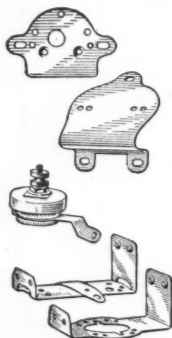


You know that a large percentage of cars have weak coils which should be replaced. Go after this business—don't wait for such coils to burn out—perhaps far from your shop where some other fellow will profit by the replacement.

Use the Jefferson No. 25 Tester to convince motorists now using weak coils that their coils actually are weak—and that new Jefferson Coils will make starting easier as well as increase pick-up, power and speed. The reserve power built into every Jefferson makes them always dependable. Furthermore, Jefferson Coils are guaranteed by the pioneers and leaders in the replacement coil field—makers of more coils than all the others put together.

Jefferson Coils

Super Ignition



NEW LOW LIST PRICES: No. 5 Jefferson Universal Coil Assortment includes E-900 Coil, four interchangeable brackets and a 12-volt resistance unit, list \$7.00. R-300—\$5.00 list, all others, \$6.00 list. E-900 coil only, list \$6.00. Brackets, each 25c list. 12-volt resistance units, each 25c list. Order from jobber today.

Free!

Write for the handsome 16" x 22½" Jefferson Wall Chart for 1926 and particulars of the new Jefferson Service-Stock Agreements which enables a dealer to average 50% profit on all Jefferson Coils at their new low retail prices.

Jefferson Electric Mfg. Co.
Largest manufacturers of small transformers
540 SO. GREEN ST. CHICAGO, ILL. U.S.A.

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No trick to sell Eaton Bumpers these days

*And you can count on
bigger profits than ever*



WITH traffic growing denser every day, car owners are buying bumpers without being urged. They'll buy from you provided you carry a line that satisfies them in the matter of appearance and protection. That's why it's well to concentrate on Eaton Bumpers. The new models are better and more beautiful than ever.



But that's not the only reason. Eaton Bumpers are priced to allow a handsome profit. And Eaton offers the finest supply service in the entire bumper field. Hundreds of Eaton jobbers, backed by complete warehouse stocks, serve the entire country. You can get any Eaton Bumper you need *when you need it*.

Call the Eaton jobber today and learn all about this wonderful profit opportunity. Write us for his address if you don't know him.

THE EATON BUMPER & SPRING SERVICE CO.
Cleveland, Ohio

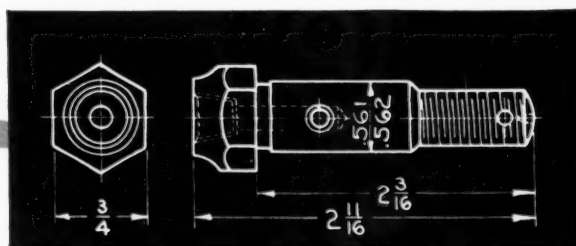
Factory Branches with complete warehouse stocks at—Boston, New York, Philadelphia, Cleveland, Detroit, Chicago, Minneapolis, Denver, Kansas City, Dallas, Atlanta.

[The Eaton organization also produces the famous Eaton Axles and Eaton Springs]



EATON BUMPERS

CUSTOM BUILT FITTINGS AND BUMPERETS FOR EVERY MAKE AND MODEL OF CAR



"Made to Blue Print"

What Kind of Bolts and Bushings Should be Used for Replacement Purposes?

THE Modern Motor Car is born in the engineering laboratory and on the testing grounds. Engineers insist on KNOWING what is required of each piece and part—they must KNOW the stress and strain to which each piece and part is subjected in actual use.

Then they write their specifications in the blue prints—and the finished product is the mechanical picture of results realized from repeated tests and experiments.

And when a car manufacturer calls for bolts and bushings made to certain blue print specifications, there is a definite reason for those specifications. And when the original bolts and bushings wear out—as they surely do—isn't it logical and important to replace them with bolts and bushings made to the same specifications?—for how else can you get a continuation of the service realized from the original equipment?

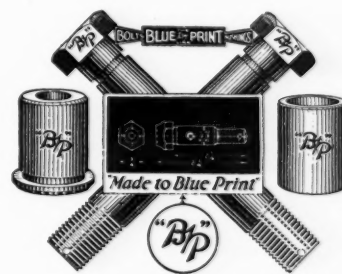
*Ask yourself that question two or three times,
—then ask your Jobber or write us for the answer. 'Twill be a profitable step for you.*

The Fostoria Screw Co.

308 Blue Print Ave.

Fostoria, Ohio

Export Office: 30 Water St., New York, N. Y. Cable Address: Widbloco
Codes Used: Bentley, A. B. C. 5th Edn., Western Union

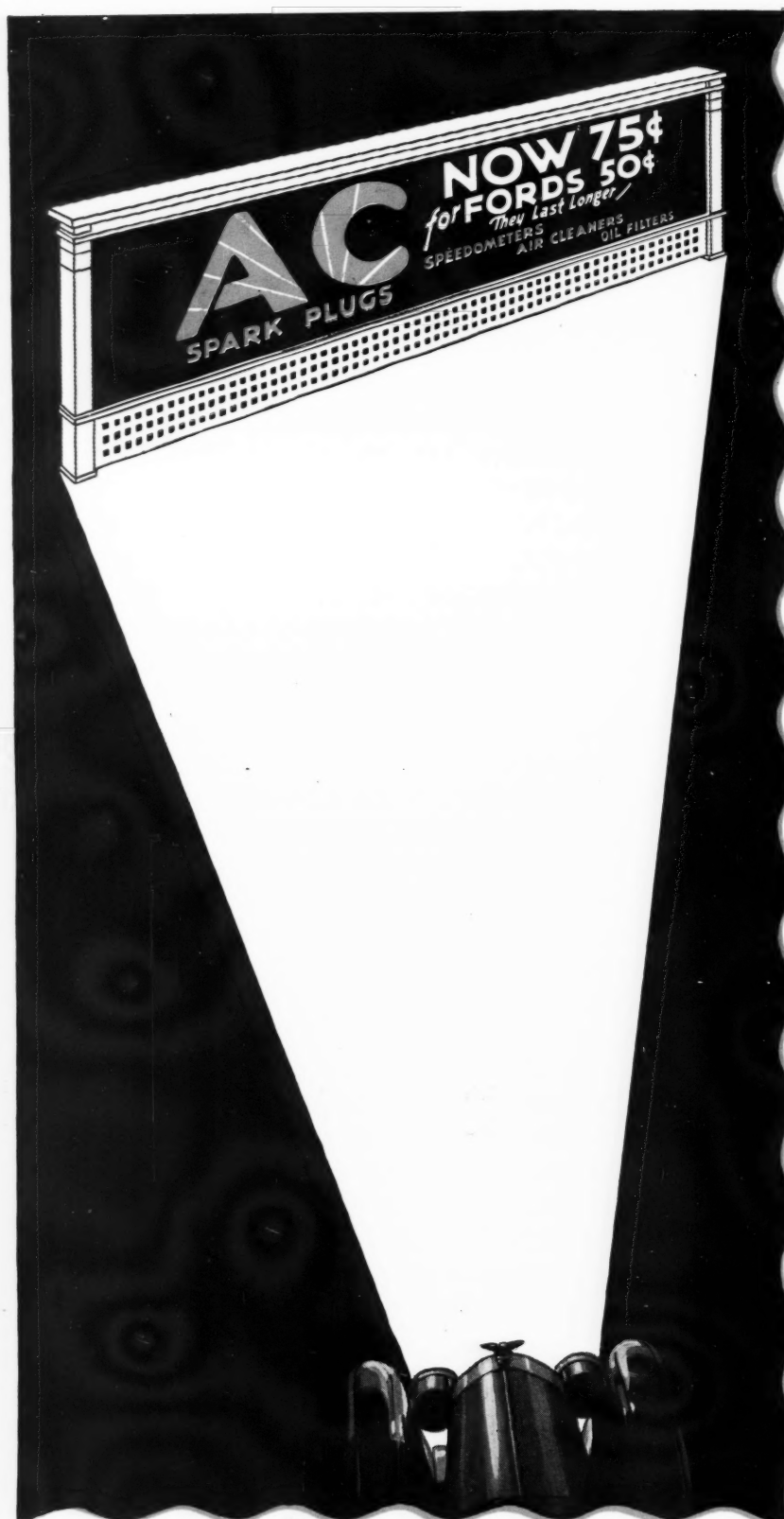


Blue Print Bolts and Bushings are made to the blue print specifications of the car manufacturer, and are, therefore, a continuation of the original equipment.

King Bolts
Spring Bolts
Tie Rod Bolts
Steel and Bronze
Bushings

*"Bp" "Made to
Blue Print"*

BOLTS BLUE THE Bp LINE PRINT BUSHINGS



The **AC**
SPEEDOMETER
for

FORDS
NOW
\$10⁰⁰

A FULL SIZE SPEED-
OMETER—registering

Speed
Total Mileage
Trip Mileage

The AC Speedometer for Fords is of the same high quality as furnished manufacturers of the following cars for original factory equipment.

BUICK	HERTZ
CADILLAC	NASH
CHANDLER	OAKLAND
CHEVROLET	OLDSMOBILE
CHRYSLER	PEERLESS
GRAY	PONTIAC

The AC Direct Drive—exclusively an AC feature—is trouble-free and fool-proof as it does away with the swivel joint.

Heavily advertised through painted highway bulletins, national magazines, newspapers and dealer helps.

They carry a good margin of profit for the dealer.

AC Spark Plug Company
FLINT, Michigan

AC-SPHINX
Birmingham
ENGLAND

Makers of
AC Spark Plugs
AC Speedometers
AC Air Cleaners
AC Oil Filters

AC-TITAN
Levallois-Perret
FRANCE

AC Spark Plugs

Have the biggest demand and the greatest sales possibilities for the reason that 148 of the leading automotive manufacturers use them as original equipment.

Now popularly priced—75c for the regular line and 50c for the AC 1075 for Fords.

AC Air Cleaners

Prevent dust from entering the engine through the air intake of the carburetor.

Packed complete with all installation attachments—easily mounted and reasonably priced.

AC Oil Filters

Positive protection against engine wear.

Keeps the oil clean, making it unnecessary to change oil every 500 miles.